



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

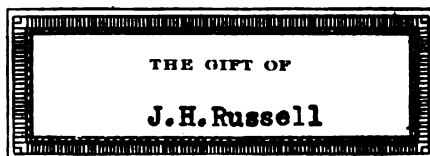
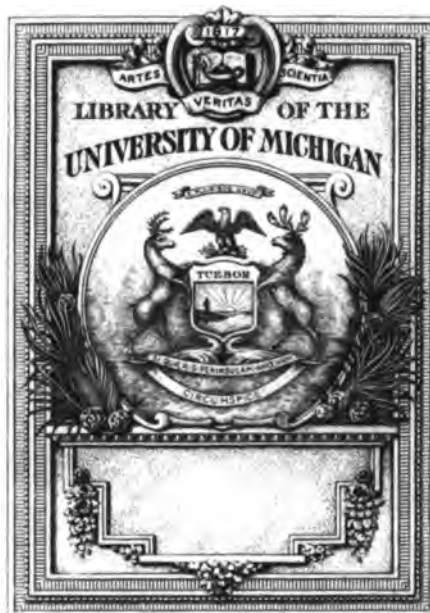
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

B 489652





AG
5
.544

SEARS' POPULAR PICTORIAL WORKS!

THE MOST SPLENDIDLY-ILLUSTRATED VOLUMES FOR FAMILIES EVER ISSUED ON THE AMERICAN CONTINENT, CONTAINING MORE THAN

TWO THOUSAND BEAUTIFUL ENGRAVINGS,

DESIGNED AND EXECUTED BY THE MOST EMINENT ARTISTS OF ENGLAND AND AMERICA.

Published and sold by SEARS & WALKER, Nos. 114 Fulton and 122 Nassau street, New York city.

— A CAREFUL EXAMINATION — of the contents of this Circular is solicited from all persons into whose hands it may fall.

A Six Dollar Book published and sold at Three Dollars.
THE CHRISTIAN'S GIFT FOR 1844.



THE MOST SPLENDIDLY ILLUSTRATED WORK ON BIBLE HISTORY ever offered to the American Public, embellished with several hundred new and fine Engravings,—the whole work (two volumes in one) making Seven Hundred large and closely-printed octavo pages, elegantly bound in gilt, and lettered, in the most finished style of modern book-making.—PRICE ONLY THREE DOLLARS: being the CHEAPEST WORK EVER ISSUED IN THE WORLD! The Publishers respectfully request Clergymen, Teachers of Sabbath-schools, Heads of Families, and Booksellers, to examine this new, cheap, and splendidly-illustrated Work. The character and contents of this volume are better defined by its expressive title:

SEARS' NEW AND COMPLETE HISTORY OF THE HOLY BIBLE.

AS CONTAINED IN THE OLD AND NEW TESTAMENTS, FROM THE CREATION OF THE WORLD TO THE FULL ESTABLISHMENT OF CHRISTIANITY. CONTAINING A CLEAR AND COMPREHENSIVE ACCOUNT OF EVERY REMARKABLE TRANSACTION RECORDED IN THE SACRED SCRIPTURES DURING A PERIOD OF UPWARDS OF FOUR THOUSAND YEARS, WITH COPIOUS NOTES, CRITICAL AND EXPLANATORY, FORMING AN ILLUSTRATED COMMENTARY OF THE SACRED TEXT.

PART I.—THE OLD TESTAMENT HISTORY.

PART II.—THE NEW TESTAMENT HISTORY.

BY ROBERT SEARS,

AIDED BY THE WRITINGS OF OUR MOST CELEBRATED BIBLICAL SCHOLARS, AND OTHER LEARNED PERSONS, WHO HAVE MADE THE SCRIPTURES THEIR STUDY.

Commentators, lexicographers, oriental travellers, and Biblical critics of the greatest name, have been extensively and carefully consulted in preparing this work. The Editor trusts it will be found worthy of the patronage of Christian pastors, instructors, and parents, of all denominations; and well calculated, under the Divine blessing, to enlighten the understanding, purify the heart, and promote that KNOWLEDGE by which we may obtain happiness in this world, and eternal salvation in that which is to come.

OPINIONS OF THE PRESS.

The following extracts are from a few of the numerous Recommendations that the work has already received:—

From the Editor of the *United States Literary Advertiser*.—The most splendid Gift Book of the season, and the cheapest and most useful Work ever issued on either side of the Atlantic, is SEARS' "New and Complete History of the Bible," deduced from the labors of the most renowned Biblical scholars of all countries, incorporated with numerous original and curious embellishments, engraved by the first artists,—which has just made its appearance. This work proves not only an elegant, but a most interesting and valuable volume. Evidently no pains or cost have been spared to render it such; and when it is remembered that it is the production of the well-known editor of the "Bible Biography" and other Pictorial Works, which have had such an extraordinary popularity, we feel assured that the most sanguine anticipations of the Christian Public will not fail of being realized. From what we have seen of it, we predict this work will be pronounced at once the most useful and splendid of all Mr. Sears' pictorial publications. Literature, profane and sacred, has been combined with the aid of several hundred elegant embellishments to produce a work eminently adapted as a FAMILY BOOK of the very best order; while we consider it also one of the cheapest ever presented to American patronage. Of the descriptive and explanatory letter-press, it is enough to say that the records of ancient history, and the researches of the best theologians, have been put in requisition for the elucidation of scripture difficulties, and the illustration of obsolete customs, manners, &c.; and the fault will be with the public if such a book fails of unexampled success.

From the *Oxford (N. Y.) Beechline*.—Of all the illustrated works prepared by Mr. Sears, the best of them, is his "Pictorial History of the Bible," which we have now before us; and when we take into consideration the great an interesting interest which every object in the ancient "land of promise," whether of nature or art, possesses in the mind of every Christian,

we can not but augur well for its success. The journeyings to and fro of the "chosen people of God," and the local of every event in their history, the sublime and varied descriptions of which in holy writ used, in early years, before the "ways of the world" took such an appropriating hold of almost every imagination, to charm our morning, our noonday, and our evening meditations, are treated of, in the book now before us, in a manner that will repay with interest the most fastidious calculator on the score of trouble and expense. The typography is extremely beautiful, and the pictorial illustrations, which are very numerous, possess, as works of art, the highest excellence. They are not merely of an ornamental description, but exquisitely-finished representations of costume, monuments of ancient art, and objects of natural history, and are the production of some of the finest artists of the present day.

From the *Christian Herald*.—This is indeed a valuable and splendid work, being neither a reprint nor a fresh compilation of old matter, but a new history altogether, supplying what was wanting in previous works. Such an undertaking would have appeared a few years ago in three or four ponderous quartos, at a price beyond the means of all but the wealthy: it is here placed within the reach of the humblest class of book-buyers. The subjects of the wood-engravings consist of views showing the features of the landscapes, the cities, ruins, and natural curiosities of the country, and illustrating the customs, habits, dress, arts, and social condition of the people of Palestine;—the views are beautiful pictures, enlivened with figures, and executed in the most finished style.

From the *Gospel Publisher*.—Here is a work that will never cease to sell, or be admired by the lovers of the sublime and beautiful. The first part, on the Old Testament, is indeed a complete treasury of religious knowledge, so arranged as to form a complete "history of the Jews," following them into the various countries in which they have been dispersed. The pictorial illustrations consist of highly-finished wood-cuts, representing the aspect of the country, its cities, ruins, and natural curiosities, with the habits and customs, dress, occupations, and social condition of the people. The laborious and persevering editor intends to work those mines of information, the depth and extent of which appear to have frightened all former compilers.

We can not withhold our most cordial good wishes that in every sense of the word, literary and commercial, this formidable, yet very desirable undertaking may be crowned with complete success.

Circular.—Please Read!

Addressed to all Clergymen, Superintendents and Teachers of Sabbath Schools, Postmasters, and all persons who may wish to act as AGENTS in disposing of this new and beautiful volume.

DEAR AND RESPECTED SIR: Having had some correspondence with you, and knowing you to be a true friend and patron of the great enterprise in which we are engaged, in the universal diffusion of useful and religious knowledge throughout every section of this wide-spread continent, we take the liberty of sending you this prospectus of our new and splendid pictorial work, entitled, "A NEW AND COMPLETE HISTORY OF THE BIBLE," two volumes (the Old and New Testament), just published and completed in one volume of 700 large octavo, closely-printed pages, new type, elegantly illustrated with new and beautiful engravings, and substantially bound in gilt, and lettered. We feel anxious to introduce it, as soon as possible, into every family throughout this wide-spread continent, who have the means to procure it. We therefore affectionately and respectfully ask of you either to act as Agent yourself, or appoint in your place some good and trustworthy substitute for your city, town, county, or place of residence, as may best suit your convenience.

The whole work has been got up in the best and most finished style of modern book-making, and will be sold at Three Dollars. THREE DOLLARS! for a large, elegant, illustrated volume, of 700 pages, handsomely bound, complete. To Agents the work will be put at the lowest possible price, and every facility will be afforded which shall aid them in the disposal of it.

As the demand for this work is very great, Agents had better engage their districts, and order such a supply as they shall probably want therefor.

The Editor of this work has no hesitation in saying, that this is (for the price) one of the most useful works on Biblical history ever offered to the American public, forming within itself a complete "Commentary on the Old and New Testaments." It has been designed for utility and permanent usefulness; and young persons of good education, whose natural inquisitiveness has been quickened by intelligence, are especially intended to be benefited by this work, aiding them in their studies, while seeking to understand more fully the saving doctrines of the Holy Scriptures.

This "New and Complete History of the Old and New Testaments" is respectfully offered to the Christian Churches of America; and, if worthy, will receive all the patronage it deserves. AND WE ASK NO MORE. Several of our friends, whose learning and experience eminently qualify and entitle them to pronounce an opinion on such a work, declare their conviction that it will be found appropriately seasonable in our eventful but auspicious times: for though daring infidelity, with brutalizing immorality among some portions of the people, and the specious system of Popery, are assuming new forms in their opposition to the Divine Revelation, multitudes of our youth are eagerly inquiring for SAFER KNOWLEDGE, and seeking with deeply-felt interest for a more comprehensive acquaintance with the pure ORACLES of God.

In conclusion, if circumstances should prevent you from accepting of the agency of this work, you will please appoint some friend in your church or neighborhood. Humbly commending this work to the gracious benediction of God our Saviour, and respectfully offering it to the patronage of all Christian pastors, instructors, and parents, the author trusts that it will be divinely countenanced as the means of edification and salvation to many thousands throughout the United States and elsewhere: as well as being rendered conducive to the diffusion of CHRISTIAN KNOWLEDGE, promoting the cause of evangelical piety, and becoming a lasting blessing to the rising, present, and future generations.

Yours, respectfully,

ROBERT SEARS, Editor,
122 Nassau street, New York.

II.

A Christian Father's Present to his Family. HOLIDAY GIFT FOR THE YEAR 1844. A BOOK FOR EVERY FAMILY IN THE UNITED STATES.

☞ The following important and interesting Work consists of Five Hundred pages octavo, containing upwards of FIVE HUNDRED new and beautiful ENGRAVINGS, fine paper, handsomely bound in gilt, and lettered, and is afforded at the low price of \$2.50 per copy. In preparing the present volume, our aim has been to make a book (for its size and price), the VERY BEST and MOST USEFUL ever published in modern times; aiming at universal excellence, that it might be justly entitled to universal patronage and support. On examination, it will be found useful, and eminently adapted to interest, instruct, and improve. It is suited to persons of all ages and of every rank, and is equally worthy of a place in the parlor as in the kitchen, among the limited collection of the young, as well as the various and more extended library of the man of reading. We think it would be difficult to select a more appropriate GIFT at the approaching holidays. The writings of the most eminent divines that have ever lived are laid under contribution, and passages of eminent beauty are taken from them. If, therefore, variety has charms, or religion is lovely, or eloquence is admired, this book will be read with delight; for here is variety without looseness, religion without fanaticism, and eloquence pleading the cause of God with man. The following is its expressive title:

SEARS' BIBLE BIOGRAPHY;

OR, THE LIVES AND CHARACTERS OF THE PRINCIPAL PERSONAGES RECORDED IN THE SACRED WRITINGS; PRACTICALLY ADAPTED TO THE INSTRUCTION OF YOUTH AND PRIVATE FAMILIES; TOGETHER WITH AN APPENDIX, CONTAINING THIRTY DISSERTATIONS ON THE EVIDENCES OF DIVINE REVELATION, FROM TIMPSON'S KEY TO THE BIBLE: BEING A COMPLETE SUMMARY OF BIBLICAL KNOWLEDGE, CAREFULLY CONDENSED AND COMPILED FROM SCOTT, DODDGE, GILL, PATRICK, ADAM CLARKE, POOL, LOWTH, HORNE, WALL, STOWE, ROBINSON, AND OTHER EMINENT WRITERS ON THE SCRIPTURES. ROBERT SEARS, EDITOR. ENBELLISHED WITH SEVERAL HUNDRED ENGRAVINGS ON WOOD, ILLUSTRATIVE OF SCRIPTURE SCENES, MANNERS, CUSTOMS, ETC.

RECOMMENDATIONS.

The following extract is from a lengthy review written by the Rev. W. C. Brownlee, D. D., and is only ONE out of several hundred recommendations, from the clergy and the press, that the work has already received:

"New York, August 6, 1843.

"This is, beyond question, one of the most elegant books ever presented to our fellow-citizens in this republic. It ought to be in every Christian family for its innate value; and in every patriotic family as a splendid specimen of our progress in domestic manufacture, and the advancement of our artists and manufacturers in their rivalry with those of Europe.

"W. C. BROWNLEE."

From the *New York Observer*, July 30.—The following editorial notice of Mr. Sears' new and elegant work on the Bible is from the *New York Observer*, one of the oldest, most respectable, and best conducted religious newspapers published in the United States. An opinion coming from this high quarter is worth a thousand of the ephemeral puffs that are published in the papers of the day:

"We have just received this work, published under the editorial auspices of Mr. Sears, the publisher of the Pictorial Illustrations. It is brought out with great neatness, the paper and typography of the first quality, and the engravings, many of them, for wood-cuts, are very fine. The frontispiece, by Lossing, is particularly worthy of commendation, being one of the finest specimens of wood-engraving which we have lately seen.

"The reading matter consists of well-drawn biographies of distinguished Scripture personages, and written for the special instruction of the young, who will be pleased with the general appearance of the book. The Appendix contains a series of selected Biblical articles, carefully condensed and compiled from the most distinguished writers, constituting altogether the most valuable part of the work.

From the *Rev. Spencer H. Cone, President of the American and Foreign Bible Society*.—"Mr. ROBERT SEARS: Dear Sir, I am pleased with your new and elegant volume of 'Bible Biography.' The several hundred engravings are well executed; and the entire getting up of the work reflects much credit on its editor and publisher.

Yours, &c.

S. H. CONE."

☞ Upwards of 10,000 copies of the above instructive and beautiful volume have been sold in the space of ten months.

III.

AN IMPORTANT, VALUABLE, AND CHEAP WORK,
COMPLETE IN ONE VOLUME ROYAL OCTAVO, CONTAINING ABOUT
SIX HUNDRED PAGES OF LETTER-PRESS, AND MORE THAN
FIVE HUNDRED ENGRAVINGS—ELEGANTLY BOUND
IN GILT: PRICE ONLY \$2.50 PER COPY.

SEARS' WONDERS OF THE WORLD,

In Nature, Art, and Mind.

Illustrated by more than five hundred Engravings, consisting of Views of cities, edifices, and other great works of architecture—monuments, mechanical inventions, ruins, illustrations of the manners and costumes of different nations, religious rites and ceremonies, cataraets, volcanoes, curiosities, trees, beasts, birds, fishes, reptiles, and the numerous objects contained in the fossil, vegetable, mineral, and animal kingdoms. Carefully compiled by ROBERT SEARS, from the best and latest sources.

☞ The above splendid Work is but just published, and nearly 6,000 copies have already been sold. It has been strongly approved of and recommended by all our leading papers, both political and religious.

AGENTS WANTED

ENTERPRISING AND RESPONSIBLE MEN throughout the United States and British provinces would do well to engage in the sale of these new and valuable volumes; and all Postmasters, Clergymen, Book Pedlars, and Newspaper Agents, are respectfully requested to act as our Agents—handsome remuneration allowed to all who engage in its sale. For particulars, address the Publishers (post paid).

To Booksellers and Agents throughout the United States and British Provinces.

☞ Persons in the country, who may receive this Circular, would do well to procure a Subscription Book, and obtain at once the names of all their friends and acquaintances, at least, to these invaluable Publications. Will each Christian friend who complies with this request have the kindness to inform the publishers how many copies will be wanted for his neighborhood, by mail (post paid), as soon as possible? It is their intention to spare neither pains nor expense, to introduce these useful Works into every family throughout the Union.

*Persons enclosing money will be careful to pay the whole postage; and in ordering books, will state explicitly how they are to be sent to them.

E. WALKER & CO., 114 Fulton street, New York city.

IV.

RICH, AMUSING, AND INSTRUCTIVE BOOK!

"He who blends instruction with delight,
Profit with pleasure, carries all the votes."

Sears' Guide to Knowledge;

A splendidly-illustrated Work, comprising the finest series of embellishments ever presented to the American public, in one handsome large octavo volume, of 500 pages, elegantly bound. Price only \$2.50. This splendid volume comprises within itself a COMPLETE LIBRARY OF

Useful and Entertaining Knowledge,

Condensed in form, familiar in style, and copious in information, embracing an extensive range of subjects in LITERATURE, SCIENCE, and ART.

V.

SEARS' PICTORIAL ILLUSTRATIONS OF THE BIBLE.

3 vols. \$5.00. 600 Engravings. Upward of 40,000 copies have been sold.

☞ Each of the above Works is beautifully printed and illustrated, and put up in richly-ornamented bindings, highly adapting them as splendid presents for young people.

Persons clubbing together for 4 copies of either of the preceding works, and sending the money free of postage, will receive a fifth copy gratis.

All the above books are found to be valuable additions to Sabbath-school and religious Libraries, and are the most useful and suitable Gift-books for Holiday Presents now published. Teachers and parents are invited to call and examine these books.

VI.

READING FOR ALL!

TO THE CHRISTIAN PUBLIC.

CHEAPEST AND BEST FAMILY MAGAZINE IN AMERICA!

SEARS' NEW MONTHLY FAMILY MAGAZINE.

A Monthly Miscellany of Moral and Religious Instruction, embellished with numerous Engravings. Published on the 1st of every month, in parts of forty to fifty large octavo pages each (double columns), at 18 3/4 cents per part, payable on delivery. To mail subscribers Two Dollars per annum, invariably in advance.

In offering such a miscellany as the above periodical to the public, we wish to make it clearly understood what is the object proposed to be accomplished by its publication, and what will invariably be the character of its contents; and by no species of disguise; or form of deception, attempt to make an impression or gain a favor, without possessing a legitimate claim to their enjoyment. "SEARS' FAMILY MAGAZINE" is a periodical whose object is to collect, condense, and systematize, the great mass of standard general knowledge, contained in works so numerous and voluminous as to be altogether beyond the reach of mankind in general; and thus collected and prepared, to place it, by its cheapness and comprehensiveness, within the acquisition of ALL.

Please to read the following, from the editor of the United States Literary Advertiser, of January, 1843:

"A new and great literary enterprise has been commenced by Robert Sears, which has for its object the diffusion of popular information on general knowledge, to be called 'SEARS' FAMILY MAGAZINE.' We wish all success to this deserving endeavor in behalf of popular instruction; and as we hear it is to be profusely embellished, and to include among its contents the quintessence of all the valuable contributions of the London 'Penny Magazine,' Chambers' 'Edinburgh Journal,' and other admirable works of their class, we can not doubt but that it will successfully compete with these in point of intrinsic value."

READ THIS!

Elegant Premiums for Subscribers! A VERY LIBERAL OFFER.

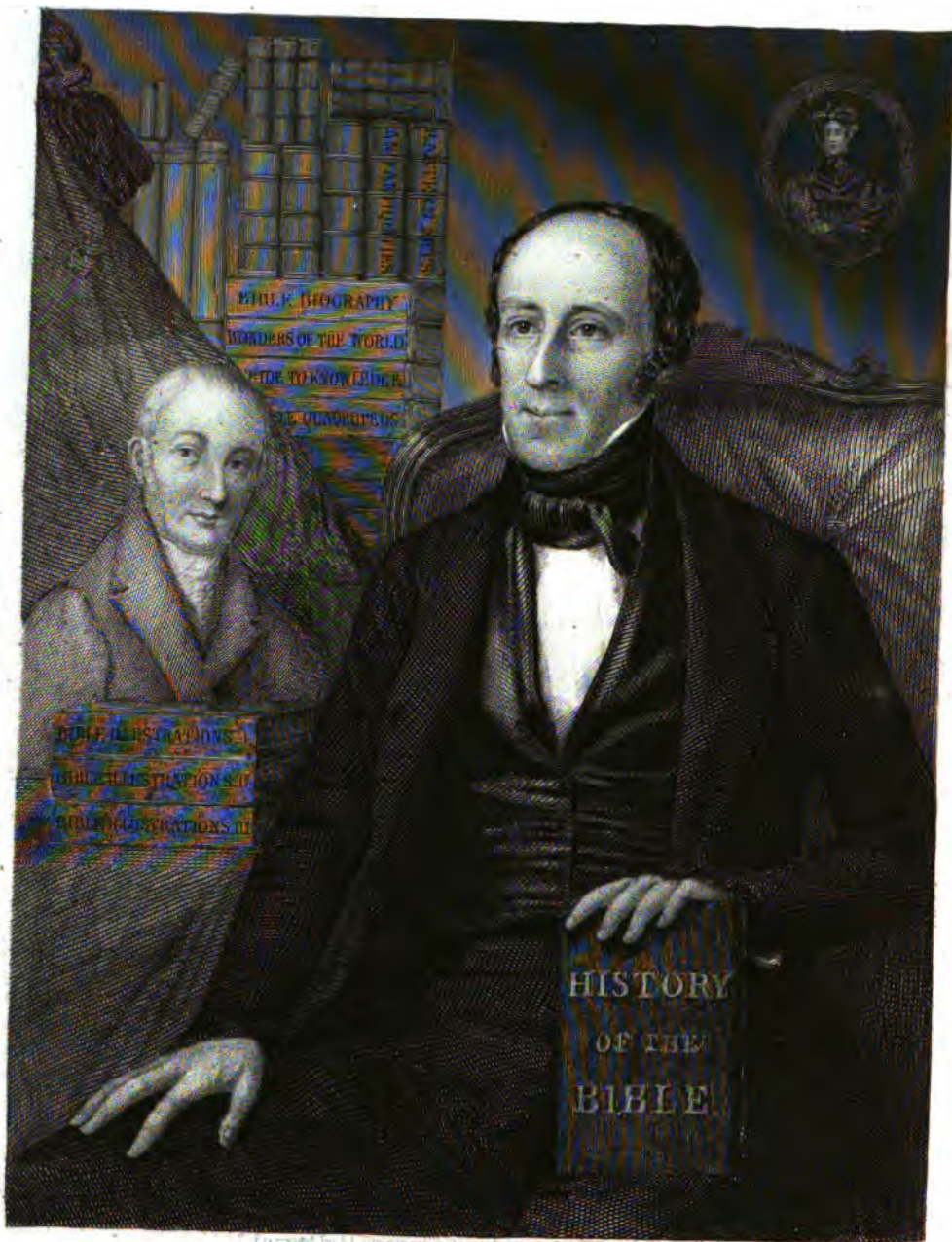
AN EASY METHOD TO PROCURE A COPY OF "SEARS' BIBLE BIOGRAPHY," OR "WONDERS OF THE WORLD."

☞ Any person either subscribing himself, or procuring a new subscriber, to "Sears' Family Magazine" for one year, and remitting \$3, current funds, free of all expense to the publisher, shall receive a copy of that periodical for one year, and a volume of either of the above works, to be kept subject to his order.

☞ EVERY POSTMASTER, or any other individual, who will obtain FIVE NEW SUBSCRIBERS to "SEARS' FAMILY MAGAZINE," and remit the money (\$10), free of postage, shall receive copies of the "HISTORY OF THE BIBLE," and "BIBLE BIOGRAPHY," or "WONDERS OF THE WORLD," elegantly bound in gilt and lettered—the books to be kept subject to his order. Is there a Postmaster, a Clergyman, or a Sabbath-school Teacher, in United States or British provinces, that can not easily furnish this number? TRY! Reader—TRY.

IMPORTANT TO MAIL SUBSCRIBERS.

The postage on "Sears' Family Magazine" has heretofore constituted a heavy tax on the subscribers receiving their numbers by mail. It has also operated to prevent many from subscribing who would otherwise be desirous to do so. To meet this difficulty, the publishers have taken advantage of the latest mechanical improvements in printing, by which they are now able to print the same number of pages on a sheet double the former size—so as to REDUCE the POSTAGE, as heretofore charged, to HALF the amount. It will hereafter be charged on one sheet and a half, instead of three sheets.



Yours, Respectfully,
Robert Sears.



THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX TILDEN FOUNDATION

1910 BY SEYMOUR L. WORLD LINGUISTICS

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1910 BY SEYMOUR L. WORLD LINGUISTICS
THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1910 BY SEYMOUR L. WORLD LINGUISTICS



THE
GUIDE TO KNOWLEDGE,

OR
REPERTORY OF FACTS;

FORMING A COMPLETE

LIBRARY OF ENTERTAINING INFORMATION,

IN THE

SEVERAL DEPARTMENTS OF SCIENCE, LITERATURE, AND ART.

EMBELLISHED BY SEVERAL HUNDRED ENGRAVINGS.

EDITED BY ROBERT SEARS.

"The greatest error is the mistaking of the true end of KNOWLEDGE, for men have entered into a desire of LEARNING and KNOWLEDGE, sometimes, to entertain their minds with variety and delight; sometimes for ornament and reputation; sometimes, to enable them to victory of wit and contradiction; and most times for lucre and profession; but seldom, sincerely to give a true account of their gift of reason, to the benefit and use of men: as if there were sought in KNOWLEDGE, a couch, whereupon to rest a searching and restless spirit; or a terrace, for a wandering and variable mind to walk up and down, with a fair prospect; or a tower of state, for a proud mind to raise itself upon; or a fort or commanding ground, for strife and contention; or a shop, for profit and sale; and not a rich storehouse for the glory of the CREATOR, and the relief of man's estate."—*Baron.*

NEW YORK:
PUBLISHED BY SEARS & WALKER,
114 FULTON STREET.

BOSTON: SAXTON AND PIERCE, 133 $\frac{1}{2}$ WASHINGTON STREET.—PHILADELPHIA: R. S. H. GEORGE; THOMAS, COWPERTHWAIT, AND CO.; AND E. R. LOXLEY.—PITTSBURGH, PA.: R. G. BERFORD.—ALBANY, N. Y.: W. C. LITTLE.—UTICA, N. Y.: BENNETT, BACKUS, AND HAWLEY.—HAMILTON, N. Y.: GRIGGS AND GRANT.—BALTIMORE: J. H. BESORE.—CHARLESTON, S. C.: SILAS HOWE.—PENFIELD, GA.: W. RICHARDS.—NATCHEZ, MISS.: H. M. GROSVENER.—ST. JOHN, N. B.: G. AND E. SEARS.—HALIFAX, N. S.: JOSEPH GRAHAM.—AND SOLD BY BOOKSELLERS GENERALLY, AND THE PUBLISHERS' AUTHORIZED AGENTS, THROUGHOUT THE UNITED STATES AND BRITISH PROVINCES.

MDCCCXLIV.

P R E F A C E.

"EDUCATION is the cheap defence of nations," was the wise sentiment once uttered by that great statesman, Edmund Burke. By qualifying it with the prefix, *correct*, we have in this sentiment one of the noblest truths discovered by modern political sages, and one, too, that demands large consideration in the canons of jurisprudence. By *correct* education, we mean the cultivation of the *moral* faculties, in a degree commensurate with the improvement of the intellect, and, in addition thereto, a corresponding physical culture. The perfection of these three combined form the perfect man—the image of God; and where either is wanting, or exists in an inferior degree, the symmetry of the whole is marred. The mere cultivation of the intellect—the arousing of the mental faculties to vigorous action, while the moral sentiments are allowed to remain dormant or become corrupt, too frequently proves a curse to the individual and to society, rather than a blessing. Every ray of light that illumines the understanding should also shed its influence over the habitation of the passions; and the head and heart should be equally warmed by the glorious luminary, KNOWLEDGE. This mighty power, which is bearing the human race rapidly onward toward perfection, has many agents at work; and every true philanthropist feels solicitous concerning the character of these various ministers to human improvement. The TONGUE, the PEN, and the PRESS—the utterer, recorder, and disseminator of knowledge—should all be subservient to the dictates of pure morality and sound judgment; and whosoever labors for the good of society—whosoever longs for a happy change in the social character of his race, should strive earnestly for the purification of this triad of forces, now powerfully at work wherever the beams of intelligence have shed their radiance. On every side, the Lecturer and the Essayist are laboring in the fields of Knowledge, and the Press is busy in scattering their seedlings broadcast over the intellectual soil of society, there, whether tares or wheat, to germinate and yield a harvest in kind, to be reaped and used by the young and inexperienced. In other words (without metaphor), thousands of books, pamphlets, magazines, and newspapers, are daily scattered throughout our land, bearing the sentiments of the thinkers and writers of our day and of past times, and contributing largely to the formation of the character of our youth of both sexes.

To the truly benevolent mind, the momentous questions present themselves:—What proportion of this mass of information is really useful? How much of knowledge thus offered to the intellect carries with it a salutary moral influence, and while it enlightens the understanding, improves the heart? And as, in a critical sense, *information* is not *knowledge*,—superficial and evanescent, not deep and abiding,—how much of this vast amount of the daily productions of the press contains the seeds of genuine knowledge? We fear that a correct answer to these

inquiries would spread a broad dark shadow over the picture of the march of intellect—that the winnower would find but a few measures of grain in the immense heap of chaff!

We have viewed with pain the development of this fact, in the slow improvement, in a moral point of view, of society around us, while general intelligence is so rapidly increasing. Everybody reads—few study. Mind acting upon mind, through the medium of the "cheap literature" of the day, is developing on every side a vast amount of hidden intellectual vigor, destined to exert a powerful influence over the future character of the race. But amid all these ministrations to the wants of growing intellect, there is too much apathy on the subject of corresponding *moral* culture. There is now a vast amount of *mental dissipation* visible around us; and the more exciting, the more *intoxicating*, the character of a publication, the greater is the number of purchasers—the greater the profits of the vender. Out of this traffic spring evils as deleterious, and as much to be deprecated by the wise and good, as the traffic in alcohol; and every true philanthropist should labor to arrest its progress, and counteract its degenerating influence. Like those who first raised the Temperance banner, such laborers must expect small pecuniary reward, but enjoy the present remuneration of an approving conscience, and the anticipation of a final and glorious triumph. With this class of men—men who love their kind, and aim to elevate man, by a due improvement of his faculties, to his proper standard of excellence, we delight to labor, and press onward, shoulder to shoulder in the diffusion of useful knowledge. Our humble literary efforts, heretofore, have all been made in this field, and we have the heartfelt gratification of believing that they have been appreciated by the public at large, and especially by the thinking class in community. The present volume is the result of these continued efforts, and we send it forth with the ardent hope that it may prove a *USEFUL GUIDE* to *TRUE KNOWLEDGE* to those who, through youthfulness, deficient education, or inexperience, are liable to wander away from the true path, into the mazes of error.

In the following pages, we have endeavored to garner up treasures drawn from every department of human knowledge. We have endeavored to make the pen and burine subservient to the best interests of society, by portraying those various truths respecting men and things which form such important features in the constitution of the social compact. From the mines of History, Biography, Natural History, Moral and Physical Sciences, Fine Arts, and General Literature, we have prepared the choicest gems, such as emit the purest moral lustre; and at a price commensurate with the means of the most humble in worldly goods, we offer this casket to the public, with the sincere desire that it may prove valuable acquisition to the moral and intellectual wealth of every possessor.

TABLE OF CONTENTS.

ABSTINENCE from Food	Page 136	Dragons	Page 397	Miseries of Indolence	Page 364
Adaptation	464	Dreaming	381	Modes of Salutation	39
Aerial Navigation	321	Desire of Distinction	421	Modern Knowledge	99
Agriculture—Renovation of Soils	46	Despise not small Beginnings	189	Moon, Addresses to the	77
Lime in	108	Easily convinced	299	Telescopic Appearance of	468
State of, in Normandy	153	Eccentric Morals	378	Mosaics	472
Aids to Contentment	174	Education, Advantages of	15	Moses, Character of	259
Air, Color of the	186	Educability of Animals	230	Mummies	179
Alfred the Great	166	Egyptian Eating	353	Natural History	394
Alhambra, the	110	Thebes	334	the Gray Mullet	33
Almanacs	94	Eloquence	333	the Rhinoceros	71
Ancient Churches of England—		Endemic and epidemic Diseases	399	black-cap Titmouse	106
No. 1. St. Pancras	34	Enemy-makers	418	Nautilus, the	382
2. Stepney Church	93	Examples for young Men	320	Nazareth	260
Greek Foot-Racers	156	Female Characters of Scripture	364	Niagara District—Western Canada	216
Mechanics	242	Fifteen Minutes to spare	307	Nile, the River	175
World, the	262	Fireside	372	Nineveh	338
Physicians	350	First Settlement of the United States	39	Occult Sciences, the	355
Warfare, &c.	373	Five Facts, &c.	80	Ocean, Color of the	428
Navigation and Commerce	409	Fixed Stars	314	Oracles and Mysteries	474
Ancients, Wealth of	235	Flattery	248	Oriental Vine-Shades	184
Animal Magnetism—Greatrakes, &c.	62	Flowers	311	Migration	228
Animal Motion	109	Formation of Character	278	Water-Carrier	262
Antioch	396	Fragment	25	Vegetation	358
Ants	456	Future, the	181	Palmyra	433
Art, Thoughts on	391	Ganges, the	429	Patmos	399
Artesian Well	74	Geology	261	Penn W., Sketch of	272
Astor, John J.	288	God everywhere	55	Petra, or Selah	296
Astronomical Clock	101	Good old Man	47	Philosophical Facts	47
Athens	190	Greatrakes V., Sketch of	62	Philosophy of Life	25
Atmosphere, the	108	'Hallowed be thy name'	14	Physiological Facts	16
Pressure of	233	Hamburgh	303	Pilgrims, the	254
Aurora Borealis	148	Hart, the	452	Pleasures of Science	158
Be Something	73	Henry Patrick, Sketch of	145	the Country	293
Bible, the	160	Hill, Rev. Rowland	490	Popular Errors	57
Accuracy of	214	Hippopotamus, the	393	Public Diversions, Reflections on	104
obscure Passages in	268	History, Uncertainty of	80	Rachel's Tomb	227
Birds, Language of	316	Honey-Bee and the Ant	226	Rain	235
Blossoms	448	Horticulture	126	Rama	253
Botany, the Study of	23	Human Life, Sacrifice of	70	Reading, Love of	189
British Museum	80	Identity of Persons	436	Religion, Connexion of Science with	65
Bunyan J., Sketch of	68	Inventions, Chronology of	128	River Jabbok (Palestine)	366
Camel, the	243	Irish Peasantry, their Superstitions, &c.	216	Ruins of Balbec	21
Canaan, Fertility of	143	Irrigation in the East	102	Caesarea	26
Canot	155	Ishmaelites, the	247	ancient Cities—	
Caravans	35	Jackal, the	138	No. 1	428
Carey, R.-v. Dr., Sketch of	209	Journeyman Printer	61	No. 2	459
Cathedrals—St. Paul's and St. Peter's	237	Kingston	256	Rural Funerals	17
Cattle	78	Knowledge of the World	342	Samaritans, Account of the	144
Change of Feeling	271	Language of Signs	328	Self-Education	16
China, its Commerce, &c.	221	Languages	58	Seasonable Suggestion	167
Chinese Boats	134	Last Supper, the	197	Sherman Roger, Sketch of	223
Christian Missions, their Influence, &c.	5	Leopard, the	361	Shoemakers, eminent	29
Comets	285	Light, in the human Body	48	Sidon	269
Comicalities of Nature	114	Listeners	457	Signers of the Declaration of Indepen-	
Constantinople	347	Literary Pursuits, Advantages of	28	dence	252
Country, the	117	Local Memories of great Men		Siloam, Pool of	220
Cranberry, the Cultivation of	199	No. 1. Cowper	1	Simoom, the	276
Crane, the	312	2. Burns	49	Singapore	382
Creation, Boundlessness of	208	3. Bacon	89	Sleeping, Thoughts on	196
Cultivation	77	4. Milton	129	Small Birds, their Uses, &c.	408
of mountainous Districts	418	5. Petrarch	169	Snow-Crystals	133
Damascus	152	6. Goldsmith	249	Spirit of the Age	67
Day at a Tobacco Manufactory	40	7. Thompson	329	Springs and Fountains	431
Ship-Yard	81	8. Poussin	369	Standards	470
Hat Factory	118	9. Burke	449	Steam, Wonders of	318
Pianoforte Factory	181	London, Account of	263	Navigation	453
Bookbinding	200	Love of Nature	367	Stoke Manor-House	76
British Museum	279	Malta	30	Struggles of Adolescence	257
Sugar-Refinery	449	Manner	475	Students, Hints for	168
Leather Factory	477	Marine Animals	56	Study on the Farm	360
Copper and Lead Factory	348	May	207	Sun, the	105
Death of Plants	109	Maxims	92	Swallows	365
Death's Conquest	150	Memory	124	Talegalla, the	139
Decision	168	Mental Industry	185	Temple of Diana at Ephesus	308
Dew, the	268	Mirage, the	277	Theory of Winds	332
Do we not boast too much?	97	Misdirected Efforts	317	Thermometer, the	340
Dogs					

INDEX TO THE EMBELLISHMENTS.

Thrashing Corn in the East	Page 234	Valor	Page 320	Washington, by Eliza Cook	Page 178
Thunder-Storm, the	234	Value of Time	392	Water, its Value in hot Climates	56
Tiberias, &c.	273	Variations of the Weather	367	What does he do for a living?	32
Time,	415	Vegetables	292	Whitefield, Rev. G., sketch of	343
United States, first Settlement of	39	Virgin Earth	366	Winter Sleep of Animals	96
Growth and Power of	336	Virtues of cold Water	372	Write written right	20
Ur of the Chaldees	149	Voice from the Past	309	Year, Beginning of in various Countries	374

INDEX TO THE EMBELLISHMENTS.

ALHAMBRA, the—Hall of Abencerrages	Page 110	Date Palm-Tree	Page 368	Pianoforte Factory—Interior View	Page 181
Gate of Judgment	111	Dogs	97	Key-cutter at work	184
Fountain of Lions	112	Doum-Palm	389	treble action of Square	184
Mosaic	113	Eastern Garden	143	Fret-cutter at work	185
Ancient Greek Foot-Racers	156	Shepherds	230	Action of a Cabinet	186
Thebes	334	Egyptian Stewards	353	Plague, the	405
Egyptian Palace	335	culinary Vessels	354	Pool of Siloam	220
Physicians	350	War Chariots	375	Poussin, Portrait and Vignettes	369
Romans at Meat	355	Embalming, Process of	180	Presentation of Moses to Pharaoh	289
Warrior and Armor-bearer	373	Ephesus, Ruins of the Temple	306	Queenstown, View of	215
Egyptian Soldiers	376	the common Crane	312	Rachel's Tomb	227
Egyptian and Roman Ships	411	Numidian Crane	313	Rama, View of	253
Antioch, View of	396	crowned Crane	314	Rhinoceros, the	71
Ants, Nests of, &c.	466	Giving Water to a Traveller	57	Ruins of Persepolis	423
Aradus, Island of	410	Goldsmith, Portrait and Vignettes	249	Ephesus	425
Artesian Well, the	74	Gray Mullet, the	33	Sardis	426
Athens	190	Grape-Vine	126	Palmyra	433
Areopagus	195	Greatrakes, V.	62	near View of	434
Aurora Borealis	148	Hall of the Abencerrages	110	with Arab, &c.	435
Bacon, Lord, Portrait and Vignettes	89	Hamburg from the Alster	303	Egyptian Temples	480
Balbec, Ruins of City of	21	Harvest in Palestine	144	the Forum, Rome	462
circular Temple of	22	Harta, Group of	452	Rural Funerals	17, 18
Balloons, Montgolfier's	322	Hat Manufactory—Battery, &c.	118	Sand-Storm	275
See also eleven other Plates	323 to 327	Cutting-Machine	119	Seacoast between Tyre and Sidon	271
Bedouin Encampment	12	Blowing-Machine	120	Ship-building—Mast-house	61
gathering Fruit	417	shaping, dying, felting, &c.	122-23	France-Timbers, &c.	63
Boats on the Ganges	429	Fibre of the Furs	121	Boring, Calking, &c.	85
Bookbinding, interior View	200	Hat Bodies	124	Sidon	269
sewing Machine	201	Hippopotamus, the	393	ancient Port of	409
rounding Back of the Book	202	Hill, Rev. Rowland	420	Singapore, View of	384
board-cutting Machine	204	Joktheel—Petra, View of	295	Slaves attending a Chariot	377
embossing Machine and Fin-	207	Rocky Valley, &c.	296	Snow-Crystals	133
isher, &c.	207	Temple in Clefts of the Rock	297	Standards, Egyptian	470
British-Queen Steamship	453	Defile in Road, &c.	298	Roman	471
Bunyan, John, Portrait of	70	Jabbok, the River	365	Stepney Church—2 Plates	93
Handwriting of	68	Kingston, View of	256	St. Pancras' old Church	34
Birthplace of	68	Last Supper	197	St. Paul's at London, View of	240
Burke, Portrait and Vignettes	449	Leather Factory—Interior View	440	St. Peter's at Rome, View of	239
Burns, Portrait and Vignettes	49	See also six other Plates	442 to 447	Stoke Manor-House, Remains of	76, 77
Cæsares, Ruins of	26	Leopard, the	361	Sugar-Refinery, Interior of, with seven	Plates
Camels	243	London, View of	263	Plates	279
loaded	38	Malta, View of	30	Suttee, Burning of a Hindoo Widow, &c.	6
at Cana, Galilee	56	Milton, John, Portrait and Vignettes	129	Sycamore and Figs	355
Women on	229	Modern Shadoofs	102	Talegalla Latham	139
Caravan, March of	35	Monastery of Mount Sinai	185	Leipna Ocellata	140
Halt of	36	Monseil, View of	339	Megapodius Tumulus	141
in the Desert	244	Moon, telescopic View of	466	Terrace-Cultivation	416
a Halt	245	Map of	467	Termites, Nest of	455
Arab Robbers meeting	247	Mosaics—Six Illustrations	472	pyramidal Nests of	457
Carey, Rev. Dr., Portrait	209	Mummy-Cases and Sarcophagi	179	Turret-Nests	457
Cattle	78	Embalming	180	Thames-Tunnel	266
Chinese Boats—Flower Boat	134	New Zealand—Huts and Fence	10	Thomson, Portrait and Vignettes	329
Sanpan	134	Nile, the River	175	Thrashing by the Sledge	224
accommodation Barge	135	Nazareth, View of	260	Horses—by the Drag, &c.	225
Chop-Boat	135	Nineveh	338	Thunder-Storm	234
Cluster of ripe Dates	390	Nautilus, the	362	Tobacco Warehouse	40
Constantinople, View of	347	Oriental Migration	228	cutting Leaves of, &c.	42
Copper and Lead-Factory, Interior of	477	Water-Carrier	262	Cigars, Snuff, &c.	See 43 to 46
See also six other Plates	480 to 484	State Dinner	353	Turkish Arabah	348
Corinth, View of	463	Table, modern	353	Tyre, View of ancient Port of	411
Cowper—Portrait and Vignette	1	Pastoral Scene	293	Ur of the Chaldees	149
Damascus, View of	152	Patmos, View of	393	Verandahs of modern Oriental House	184
		Persian Wheel, or Sackiyeh	103	Wyoming, View of the Vale of	187
		Petrarch—Portrait and Vignettes	169	Whitefield, Rev. G.	343

SWANSON'S GUIDE TO KNOWLEDGE.



COWPER AND HIS LOCALITIES.—Cowper, from a Portrait engraved in Knight's "Gallery of Portraits." At the upper right hand corner, a View of the Poet's Birth-place, Berkhamstead; and above it, Ruins of Olney Church, and Cowper's House in the Market-place, Olney. At the bottom, the "Summer-house," and the "three Leverets."

LOCAL MEMORIES OF GREAT MEN.

COWPER.

COWPER, one of the most popular of English poets, and a most delightful letter-writer, was born at the rectory of Great Berkhamstead, in Hertfordshire, on the 15th of November (old style), 1731. His father, Dr. Cowper, was chaplain to George II., and his grandfather, Spencer Cowper, one of the judges of the court of Common Pleas. By the mother's side Cowper was connected with the poet Donne's family, and with the several noble houses of West, Knollys, Carey, Bullen, Howard, and Mowbray, and so by four different lines with Henry III., king of England. Berkhamstead, the poet's birthplace, is a town of considerable interest. The Mercian kings had a palace here, as had also the first of the Plantagenets, who granted to the inhabitants peculiar liberties and exemptions. In after-times two royal favorites possessed the honor and castle, which was attached to the earldom of Cornwall: Piers Gaveston, in the reign of Edward II., and Robert de Vere, in that of Richard II. During the last few years of her miserable life, Cicely, duchess of York, and the mother of the last of the Plantagenets, resided here. The poet's recollections of this place were saddened by the loss of his mother, who died at Berkhamstead while he was yet but in his sixth year. One of the most beautiful of his minor poems records his feelings on that occasion.

Nearly fifty years after her death, he writes: "Not a week passes (perhaps I might with equal veracity say not a day) in which I do not think of her: such was the impression her tenderness made upon me, though the opportunity she had for showing it was so short."

Cowper was now placed at a boarding-school at Market-Street in the same county, kept by a Dr. Pitman, where he suffered much from the cruelty of an elder boy. His savage treatment, he says, impressed such a dread of his figure on his mind, that he was afraid to lift his eyes upon him higher than his knees; and he knew him better by his shoe-buckles than by any other part of his dress! No inconsiderable portion of that frightful malady which in after years so frequently made life intolerable to him, may probably be ascribed to this important era of the poet's life. Two years were spent at this school, when, being threatened with blindness, he was removed to the house of an oculist, where he spent two years more; and although he remained through life liable to an occasional inflammation of the eyes, they grew so much better, that he was enabled to enter Westminster School at the age of ten. Here he remained for eight years, during which time he acquired among his contemporaries the character of an accomplished scholar. Among those contemporaries he formed some close intimacies, and with men destined to acquire a poetical reputation only inferior to his own. There was Lloyd, the author of the poem called "The Actor," written with ease, vigor, and critical discrimination; Colman, the author of the "Jealous Wife," and of one

of the best translations of Terence in the language; and Churchill, the satirist, and author of the "Rocciad," a man of still higher power. On leaving Westminster, Cowper was articled to a solicitor, in whose office he had for a fellow-clerk Thurlow, afterwards lord-chancellor. "There was I and the future lord-chancellor," he says, in a letter to his dear friend and cousin Lady Hesketh, "constantly employed from morning to night in giggling and making giggle, instead of studying the law." On leaving this office, he entered the Middle Temple; in 1754 he was called to the bar, and in 1759 received the appointment of a commissioner of bankrupts. While here he fell in love with his cousin Theodora Cowper, the sister of Lady Hesketh, who reciprocated his affection. This circumstance forms one of the most interesting episodes of Cowper's history. The lady's father appears to have first looked on with a favorable eye, but afterwards to have peremptorily forbidden the connexion, assigning no other reason than the impropriety of marriage between persons so nearly related. In all probability he saw the incipient insanity which broke out shortly afterwards, and therefore was compelled to act as he did, and submit at the same time to the misconstruction which his conduct produced:—he could not tell Cowper what he feared. From that time the two cousins never met; although the affair left on her mind at least an ineffaceable impression. Many years afterwards, when his circumstances were not very good, he was accustomed to receive from time to time gifts from an anonymous correspondent; who that was, no one can doubt: Cowper himself playfully thanked Lady Hesketh (Theodora's sister) for these gifts, on the ground that as it was "painful to have nobody to thank," he must constitute her his "Thanks-receiver-general."

During his residence in the Temple he became a member of a club called the "Nonsense Club," consisting entirely of men educated at Westminster School, and comprising Bonnell Thornton and Colman, the principal writers of the "Connoisseur," to which Cowper contributed some papers, as well as Lloyd, and other distinguished men.

In 1763 the offices of clerk of the journals, reading clerk, and clerk of the committees in the House of Lords, all became vacant, and Cowper was offered the two last by his cousin Major Cooper, "the patentee of these appointments." They were hurriedly but gratefully accepted; and at the same moment he felt, as he states, that he had "received a dagger in his heart." The offices required that he should frequently appear before the House of Lords, which he felt was a matter of impossibility to one of his retired nervous excitable temperament. So he begged his relative to give him, instead of these offices, the office of clerk of the journals, an appointment of much inferior value; which was done. But some opposition had been raised from the first as to the right of nomination by Major Cooper; and, to his poor relative's horror, it was decided that the latter should appear at the bar of the House to be examined as to fitness. From this moment his state of mind was most pitiable: quiet, he says, forsook him

by day and peace by night. He looked forward with a sort of desperate satisfaction to the time when the ravages of the mental disease that was preying upon him should render it impossible for him to be subjected to the terrible examination; and at last, finding that event approach too slowly for his purpose, he made several attempts to commit suicide. There is nothing on record more painful in the history of any of our great men than in Cowper's own account of these lamentable events. Ultimately the office was resigned on the very day appointed for the examination, and Cowper was immediately removed to St. Alban's, where he was placed under the care of Dr. Cotton. The form of Cowper's madness was that of religious madness: he believed that he was cut off from all hope of "grace" in this world and salvation in the next. After a stay of eighteen months at St. Alban's, he was apparently cured; but from 1773 to 1776, for half of the year 1787, and for a considerable portion of the last six years of his life, he again experienced all the unutterable miseries of his awful malady.

On leaving St. Alban's, Cowper took up his residence at Huntingdon, in order that he might be near to a younger brother then at Cambridge. This is the place praised by Henry of Huntingdon (who derived his name from it) for the convenience of the fens just by, and for its great advantages of fishing and hunting. "It surpassed," he adds, "all the neighboring towns in the pleasantness of its situation, and in its handsomeness and beauty." Cowper gives a somewhat different account of it. "We have neither woods nor commons, nor pleasant prospects; all flat and insipid; in the summer adorned with blue willows, and in the winter covered with a flood."—"Yet," says he elsewhere, "the longer I live here, the better I like the place, and the people who belong to it." These last words explain the secret. He here met with the Unwin family, to a member of which, Mrs. Unwin, England is possibly indebted for one of its best poets. With them he took up his residence, and, on the death of Mr. Unwin, in 1767, removed with his widow to Olney in Buckinghamshire. In making that place their residence, Cowper and Mrs. Unwin had been influenced by their esteem for Mr. Newton, the then curate of Olney. Mr. Newton, a man of great moral worth and powerful mind, was of the class called Evangelical, and to his guidance Cowper gave himself almost entirely up. When we consider Mr. Newton's own remark upon himself—"I believe my name is up about the country for preaching people mad!"—we need not wonder at the injurious consequences which Cowper derived from this "sincere but injudicious friend."^{*} The poet's life for the next few years was spent in a state of almost continual religious excitement; nor were matters improved when Mr. Newton induced him to join in the composition of the "Olney Hymns," which the former was then preparing, for in 1772 came on the second attack of insanity, which lasted no less than four years. About the expiration of that time, Mr. Newton removed from Olney; and Cowper was induced by Mrs. Unwin to begin writing a poem,

^{*} Southey.

that lady giving him for a subject "The Progress of Error;" and thus was produced his first important poem, and at the age of forty-five! "Truth," "Table-Talk," and "Expostulation" immediately followed. Of the "Table-Talk" he says, in a letter to Mr. Newton, dated February 18, 1781, "It is a medley of many things; some that may be useful, and some that, for aught I know, may be very diverting. I am merry that I may decoy people into my company, and grave that they may be the better for it. Now and then I put on the garb of a philosopher, and take the opportunity that disguise procures me to drop a word in favor of religion. In short, there is some froth, and here and there a bit of sweetmeat, which seems to entitle it justly to the name of a certain dish the ladies call a trifle. I did not choose to be more facetious, lest I should consult the taste of my readers at the expense of my own approbation; nor more serious than I have been, lest I should forfeit theirs. Whether all this management and contrivance be necessary, I do not know, but am inclined to suspect that if my muse was to go forth clad in Quaker color, without one bit of riband to enliven her appearance, she might walk from one end of London to the other as little noticed as if she were one of the sisterhood indeed."

In another letter^{*} Cowper thus describes his favorite retreat at Olney, the place in which he composed a considerable portion of his poems:—"I write in a nook that I call my boudoir. It is a summer-house, not much bigger than a sedan-chair, the door of which opens into the garden, that is now crowded with pinks, roses, and honey-suckles, and the window into my neighbor's orchard. Having lined it with garden mats, and furnished it with a table and two chairs, here I write all that I write in summer-time, whether to my friends or to the public. It is secure from all noise, and a refuge from all intrusion." Here, too, when disinclined for literary labor, he was accustomed to amuse himself with the freaks of three leverets which he brought up with great care, and the last of which he lost only through old age, after twelve years companionship. He has immortalized these animals in prose and in poetry, English and Latin; they have been represented in prints, and engraved on seals, and Cowper's account of them contains more interesting matter on the natural history of that timid but playful race, than had ever before been contributed.

The poems before mentioned, together with some others written subsequently, were published in 1782, and another volume, containing the 'Task,' in 1785. This poem was, as is well known, commenced at the suggestion of another of Cowper's female friends, Lady Austen, to whom we are also indebted for the famous ballad of 'John Gilpin.' The translation of Homer was begun in 1784, and published in 1791. During its progress, Cowper had changed his residence from Olney to Weston, a neighboring village, where was the seat of Sir George and Lady Throckmorton, who paid the most marked attention to the poet. By this time his reputation had become firmly established. An amusing proof that poets, if not

^{*} To J. Hill, Esq.

prophets, are sometimes honored in their own country, is furnished by one of Cowper's delightful letters to Lady Hesketh:—"On Monday morning last Sam brought me word that there was a man in the kitchen who desired to speak with me. I ordered him in. A plain, decent, elderly figure made its appearance, and, being desired to sit, spoke as follows:—"Sir, I am clerk of the parish in All Saints, in Northampton, brother of Mr. Cox, the upholsterer. It is customary for the person in my office to annex to a bill of mortality, which he publishes at Christmas, a copy of verses. You will do me a great favor, sir, if you will furnish me with one." To this I replied,—“Mr. Cox, you have several men of genius in your town, why have you not applied to some of them? There is a namesake of yours, in particular, Cox, the statuary, who, every person knows, is a first-rate maker of verses. He, surely, is a man of all the world for your purpose.” “Alas! sir, I have heretofore borrowed help from him, but he is a gentleman of so much reading, that the people of our town cannot understand him!” I confess to you, my dear, I felt all the force of the compliment implied in this speech, and was almost ready to answer, Perhaps, my good friend, they may find me unintelligible for the same reason. But, on asking him whether he had walked over to Weston on purpose to implore the assistance of my muse, and on his replying in the affirmative, I felt my mortified vanity a little consoled, and, pitying the poor man's distress, which appeared to be considerable, promised to supply him. The wagon has accordingly gone this day to Northampton, loaded in part with my effusions in the mortuary style. A fig for poets who write epitaphs upon individuals. I have written *one* that serves *two hundred* persons.”

Almost immediately after the completion of the translation of Homer, he undertook to superintend a new and splendid edition of Milton's works. In 1792, for the first time for twenty years, he took a journey from home, in order to pay a visit to Hayley, at Earham, in Sussex, a place of which Cowper says, “I had, for my part, no conception that a poet could be the owner of such a paradise.” He was, however, soon glad to get home again. The symptoms of his disease were continually recurring, and in the beginning of 1794 he was again afflicted with all its worst horrors. He removed from place to place, till he stayed at East Dereham, in Norfolk, where the faithful companion and most devoted nurse of so many years, Mrs. Unwin, died. Three dreary years followed, when Cowper followed her to the grave, on the 25th of April, 1800. He was buried in St. Edmund's chapel, Dereham church,—a very ancient collegiate edifice, of which Bonner was once the incumbent.

One of the most curious circumstances attending Cowper's malady was the unerring judgment he exhibited on all matters unconnected with religion,—the continual stream of playful humor running through his correspondence, at all but the very darkest periods of his life. Thus, in 1793, while he was suffering both by day and by night from what he called his “experiences” (which appear to have been insane

dreams that possessed him between sleeping and waking), “such terrors as no language could express,” and no heart but his own ever knew, he wrote a letter to Hayley, in which he describes a dream of a very different kind, in the following exquisite manner: “Oh, you rogue, what would you give to have such a dream about Milton as I had about a week since? I dreamed that, being in a house in the city, and with much company, looking towards the lower end of the room from the upper end of it, I descried a figure, which I immediately knew to be Milton's. He was very gravely but very neatly attired in the fashion of his day, and had a countenance which filled me with those feelings that an affectionate child has for a beloved father; such, for instance, as Tom has for you. My first thought was wonder where he could have been concealed so many years; my second, a transport of joy to find him still alive; my third, another transport to find myself in his company; and my fourth, a resolution to accost him. I did so, and he received me with a complacency in which I saw equal sweetness and dignity. I spoke of his ‘Paradise Lost’ as every man must who is worthy to speak of it at all, and told him a long story of the manner in which it affected me when I first discovered it, being at that time a schoolboy. He answered me by a smile, and a gentle inclination of his head. He then grasped my hand affectionately, and, with a smile that charmed me, said, ‘Well, you for your part will do well also.’ At last, recollecting his great age (for I understood him to be two hundred years old), I feared that I might fatigue him by too much talking, I took my leave, and he took his, with an air of the most perfect good-breeding. His person, his features, his manner, were all so perfectly characteristic, that I am persuaded an apparition of him could not represent him more completely.” Who can read this, and resist the conclusion that judicious management of its author at an earlier period would have greatly lessened the miseries of his unhappy life, if it could not have altogether prevented them!

Yet, “sad as Cowper's story is, it is not altogether mournful,” says his admirable biographer, Southey; “he had never to complain of injustice nor of injuries, nor even of neglect. Man had no part in bringing on his calamity, and to that very calamity which made him ‘leave the herd’ like ‘a stricken deer’ it was owing that the genius which had consecrated his name, which has made him the most popular poet of his age, and secures that popularity from fading away, was developed in retirement; it would have been blighted had he continued in the course for which he was trained up. He would not have found the way to fame unless he had missed the way to fortune. He might have been happier in his generation, but he could never have been so useful; with that generation his memory would have passed away, and he would have slept with his fathers, instead of living with those who are the glory of their country and the benefactors of their kind.”

• “Life,” vol. ii. p. 313.

CHRISTIAN MISSIONS,

AND THEIR INFLUENCE ON CIVILIZATION.

As the connexion between Christianity and civilization may, in the course of the present work, frequently come under our notice, it seems well that we should, at the outset, make the reader acquainted with the view of this important matter which the missionary societies have taken, as well as with that which we have ourselves been led to entertain.

It is obviously of the utmost importance to know to what extent, in what manner, and on what principles, the various societies are prepared or not prepared to undertake, or to assist in, the civilization of those nations which, not less in a moral than in a spiritual sense, "sit in darkness and the shadow of death."

Now, the societies have been led by circumstances to make up their minds on the subject, and have been anxious to promulgate the views on which they have acted in this matter, and on which they still intend to act. Their several secretaries must be considered as the organs of their opinions, and among them we find a remarkable unanimity in the principal conclusions—that civilization, beyond a certain limit, is not possible without Christianity—that Christianity inevitably leads to civilization—that civilization is itself no necessary preparation to Christianity—and that, therefore, they will not attempt to prepare barbarous nations for Christianity by civilization, but are willing to promote and foster civilization as an effect and consequence of Christianity.

In the year 1836 the secretaries of the several societies were examined before the select committee of the House of Commons, appointed to "consider what measures ought to be adopted with respect to the native inhabitants of countries where British settlements are made, and to the neighboring tribes, in order to secure to them the due observance of justice, and the protection of their rights; to promote civilization among them, and to lead them to the peaceful and voluntary reception of the Christian religion."

The important and valuable evidence given before this committee, of which Mr. (now Sir) T. F. Buxton was chairman, will be of great service to us in the progress of this inquiry. Among the witnesses examined were the secretaries of the various missionary societies. Mr. Coates, the lay secretary of the Church Missionary Society, brought the matter forward in an able and luminous statement, to the principles contained in which the secretaries of the Wesleyan and London Societies declared their adhesion, and which they supported by a variety of arguments and illustrations. We will endeavor to produce the substantial matter of this truly "great argument," reserving the particular illustrations to be produced as we come among the various nations by which they are supplied.

In reply to the question,—does experience lead to the belief that it would be advisable to begin with civilization in order to produce Christianity, or with

Christianity in order to lead to civilization—Mr. C. observed—

"Most distinctly with Christianity, in order to the civilization of a savage people, in any proper sense of the term civilization. Of course a good deal will depend upon what is meant by civilization. If civilization be intended to mean the moral and social improvement of a people, my opinion is, distinctly, that Christianity is the instrument by which to bring it about. I form this opinion from several reasons, derived partly from the nature of Christianity itself, and partly from the history of Christianity.

"I find the preceptive part of Christianity tends to make men peaceable, honest, sober, industrious, and orderly. These, in my opinion, are the very elements of civilization, in the moral sense of it. I find in the Christian scheme the doctrines of man's fallen state through sin, redemption by Christ, renovation by the power of the Holy Ghost, and the great and awful sanction of an eternal judgment. Now it is clear to my mind, that the impression of these great principles on the heart of man tends directly to make him humble, self-denying, philanthropic, beneficent, apart from the consideration of those effects of the doctrines which may be considered more strictly of a religious or theological kind. Those principles, I apprehend, cannot exist in force, in any community, without the moral and social well-being of that community being greatly promoted. I look again into the Christian scheme, and observe the very emphatic description of the Gospel: it is declared to be 'the power of God.' I think that the phrase must be understood to imply, in any reasonable interpretation of the words, a Divine influence accompanying the preaching of the gospel. I see, therefore, in that an arrangement and process by which the human mind is to be operated upon, in a more powerful manner than any other agency that can be imagined. I look further into the Christian scheme, and find it to be a revelation from God: now if God be, as the Bible teaches us that he is, supreme in benevolence and beneficence, as well as in power, wisdom, and knowledge, then I think the inference is most clear and irrefragable, that to bring that revelation to bear upon mankind, is to promote their temporal welfare, as well as to provide for their eternal salvation.

"But I pass to the second series of reasons—those which are derived from the history of Christianity. This is a branch of the subject of such immense extent that it would be quite impracticable for me to do more than to glance at it. If I look at the state of the world when, at the rise of Christianity, it found Rome in the zenith of her power and glory, in the highest state of civilization, as civilization could exist in a heathen land, that mankind was ever advanced to, perhaps with the exception of Greece, which was already on the decline from her glory, and therefore I do not more particularly refer to Greece: in Rome, at this period, among other practices which I will not dwell upon, that of selling their prisoners of war into slavery prevailed, and that of exposing their prisoners of war in their public games. I find, too, in Rome, at that period, their gladiatorial games—man opposed to man in mortal



Suttee—Burning of a Hindoo widow upon her husband's funeral pile.

conflict. And this is not an accidental occurrence, but an established order of things, exhibited, not in private, not only occasionally, but habitually, at their theatres, and to the most polished and distinguished of the whole population. What do I find at the expiration of a few ages? Christianity attains the ascendancy, and these things are extinct.

"I dwell on no other topic of ancient history, but come down to modern times. I contrast the state of the European nations with, I will not say, those of Africa, but with the more civilized nations of Asia; and here I trace a distinction so broad and obvious that it need not be insisted on. I see clearly that it is Christianity which has conferred upon the European nations this distinction.

"I would only attempt further to illustrate this bearing of the subject from three or four facts of recent date. At a recent period suttees prevailed throughout our possessions in India; they are now prohibited. The voice of Christianity in this country unquestionably wrought the change. The abominable pilgrim-tax is suppressed in India by authority, and this was effected by the expression of Christian opinion and feeling in this country. I look back on the enormous evils of the slave trade: the slave trade is suppressed, and suppressed unquestionably by the force of Christianity in this country. I come to a still more recent period—a very recent one indeed: I see slavery abolished throughout the colonies, and that at the cost of 20,000,000*l.* of public money; the result, most unequivocally, of the state of Christian principle and feeling in the country—a national act, I will venture to affirm, unparalleled in the whole history of human

legislation, the glory of which redounds exclusively to Christianity."

After this, Mr. Coates proceeds to take up the question under a different aspect—namely, as illustrated by the effects of modern protestant missions. The evidence is clear under this head; but as it is derived from various nations which in due time we hope to visit, we shall not produce it in this place.

Mr. Coates was then asked—

"Although you laid the principal stress upon the introduction of Christianity, you do not overlook civilization, but you consider that civilization will be the natural companion and consequence of the effect of the introduction of Christianity? Though I have a very clear opinion as to the efficacy of Christianity as an instrument of civilization, I should not be disposed to represent Christianity as preceding civilization, because the moment Christian principle begins to bear upon the mind of man, from that moment his condition as a civilized being advances, and hence Christianity and civilization advance *pari passu*. It is, therefore, I conceive, impossible that civilization should stand still, or not go on in its due ratio, so long as Christian principle is duly brought to bear upon the population."

The committee then desired to hear the sentiments, on this subject, of the Rev. John Beecham, one of the secretaries of the Wesleyan Methodist Missionary Society. He said:—

"My attention has been long directed to this subject, and the firm conviction of my mind that Christianity must precede civilization, is the result of the inquiries and observation which I have made. So far has my experience been from proving that civil-

ization is necessary to prepare barbarous nations for the reception of the Gospel, that it has led me to the conclusion that the only effectual way to civilize them is first to evangelize them. I regard Christianity as the parent of civilization, and am persuaded that true civilization cannot be produced without it; I say true civilization, because I am aware that a certain kind of civilization may exist unconnected with Christianity. I have heard reference made to ancient Greece and Rome, for the purpose of showing that there may be civilization without Christianity; but if all true civilization includes the humanities of life, then I must conclude that those celebrated nations had not attained unto it. When I look, for instance, at the theatres of Rome, and witness the gladiatorial shows, and fights of men with wild beasts, which were there exhibited, and recollect that such spectacles of cruelty constituted the amusements of the Roman public; and when I moreover remember that in Rome there were no hospitals, no dispensaries, no almshouses, no asylums for the deaf and dumb and blind; in short, none of those humane and charitable institutions which adorn our own Christian land; I cannot conclude that the civilization of the classic heathen was anything better than a splendid barbarism; and whatever may be advanced in its praise, I must still, notwithstanding, hold that true civilization, the only kind of civilization that the Christian philanthropist can be supposed anxious to promote, cannot be originated but by means of Christianity.

"You are distinctly of opinion that the communication of Christianity must precede an attempt to convey civilization through the understanding of man merely?—Certainly.

"Will you give the reasons why you think the plan of civilization cannot succeed?—I would assign two reasons. In the first place, the want of a suitable agency would alone go far to secure its failure. The mere civilizing plan does not, in my opinion, furnish motives powerful enough to induce men to give up the comforts of Christian and civilized society, and dwell among barbarians, merely to teach them civilization. There is nothing, as I think, but the love of the souls of the heathen that will prove a motive powerful enough to induce individuals to make such sacrifices, and risk even life too. Men may be found who are ready to lay their lives upon the missionary altar, but I think you would not find any considerable number of persons who are prepared to sacrifice their lives merely to civilize and instruct the heathen.

"Has your society endeavored to introduce Christianity where the mere civilizing process had failed?—Yes. To begin with the Foulahs: although Dr. Coke was not able to find men who were willing to give up the comforts of civilized life in order to teach them civilization, we easily found men who would leave their native country, and go into the interior of Africa, and settle among them, for the purpose of teaching them the Gospel. We commenced a mission amongst this people about two or three years since. I am happy to say that the mission is of the most hopeful character; the Foulahs

listen to the Gospel, and several of them have already given proof, by a change in their tempers and their lives, that they have experienced its saving efficacy.

"Do you find that the plan of beginning with the Gospel generally succeeds?—Yes; not only with the aborigines of America, but also among the degraded negroes of the West Indies, as well as the remains of the Carib race which formerly peopled those colonies; among various tribes and nations of West and Southern Africa, among the Hindoos of India, the Budhists of Ceylon, the savage cannibals of New Zealand, and the other islanders of the South Sea. In the Friendly Islands the results of our missionary operations are very remarkable. It is scarcely ten years since we commenced our missions in that part of the world; and the ancient idolatry of the people has been already, to a very great extent, abolished. In the whole of the Habai group there is not a single idolater remaining, and about 8000 of the inhabitants of Habai, Vavou, and Tonga, have become communicants; while many hundreds of them are so far advanced in Christian knowledge that they are now engaged in assisting the missionaries to preach the Gospel, or in other ways teaching their countrymen. I would further remark upon the plan of beginning with the Gospel, and say, that success, to a certain extent, has invariably attended our missionary exertions among the heathen. I do not know an instance in the experience of our society where our endeavors have proved wholly abortive."

Mr. Beecham then produces some instances in which civilization has followed the exertions of the missionaries in Africa and America.

The Rev. William Ellis, one of the secretaries of the London Missionary Society, was next examined with reference to this question. His testimony possesses a peculiar interest, from the fact that he had himself formerly, and for many years, been actively employed on these missions in the South Seas, where the finest results of Christian civilization have been produced.

He observes: "True civilization and Christianity are inseparable; the former has never been found but as a fruit of the latter. An inferior kind of civilization may precede Christianity, and prevail without it to a limited extent: such, for instance, as the adoption, by comparatively rude tribes, of the dress and modes of living of more cultivated society, a taste for their arts, manufactures, and comforts. All this may occur without any change of character. This kind of civilization is only superficial: it may polish and smooth the exterior of human society, but it leaves the deep foundations of crime and wretchedness, the vices of human nature, which are the causes of all barbarism in every part of the world, untouched, and, consequently, supplies no sufficient remedy for the evils to be removed. My experience would lead me to regard this inferior kind of civilization as a very inefficient means of promoting the improvement of the native inhabitants of different countries. The communication with members of a more advanced state of society, by which it is produced, has often occasioned the most serious impediments to the introduction of Christi-

anity, and it certainly would not predispose men to admit the moral claims of the Christian religion. The advantages this kind of civilization offers have not proved inducements sufficiently powerful to overcome the long-confirmed habits of uncivilized nations, while their intercourse with Europeans has generally added the vices of the latter to those of the aborigines, and has increased in a fearful degree the miseries which prevailed before. If the introduction of Christianity, therefore, be the object contemplated, that kind of civilization which results from intercourse between the natives and those who have gone among them solely for purposes of traffic or colonization, is an impediment, and not a means of preparing them to receive it.

"This view of the subject is forced upon me, by my own experience during a number of years spent partly among tribes who had scarcely seen a European before, and partly among others who had been for a long time in communication with foreigners, for barter and other purposes. I am not aware of a single instance in which the kind of civilization thus produced has led any tribe to desire a knowledge of Christianity, or has predisposed them to receive it. On the other hand, there are instances, satisfactory and decisive, of numbers having been brought to embrace Christianity without this previous process of civilization. I advert to those furnished in the history of the introduction of Christianity among the North American Indians, by the labors of Brainerd, Elliott, and others; also to the introduction of Christianity into Greenland by the Moravians, where they had not been preceded by any civilizing process, and where the most decided results have followed. It is thus clearly shown that it is neither necessary nor advantageous for civilization to precede Christianity; and it is a fact of great importance in the present inquiry, that Christianity has never been introduced into any nation or tribe where civilization has not invariably followed. The process may be rapid, or the reverse, according to circumstances; but in proportion as individuals receiving Christianity yield themselves to its influence, just in that proportion they must be civilized. No man can become a Christian, in the true sense of the term, however savage he may have been before, without becoming a civilized man. Christianity produces civilization of the best and most durable kind, by supplying motives and considerations which overcome the vicious propensities and habits of the uncivilized, and furnishes a safe and certain rule for its attainment. This rule is given in a form so simple as not to be above the capacity of the lowest intellect, and yet so comprehensive as to include the widest range of social obligations: 'Whatsoever ye would that men should do to you, do ye even so to them.' In the motives it implants, and the precepts it inculcates, Christianity furnishes a complete moral machinery for carrying forward all the great processes which lie at the root of civilization. It teaches the practice of humanity, purity of heart and life, honesty, truth, industry, and justice; the promotion of peace on earth, and good will among men. It is well known that impurity, and deeds of atrocious cruelty,

are the great deformities of uncivilized societies, and the most fruitful sources of their miseries. Christianity purifies and changes the heart, and thus most effectually removes these evils, while it makes ample provision for the cultivation of the higher affections of our nature, love to God, our benefactor, and to our fellow-creatures, urging all on the understanding and the conscience by the revelation of a future state, (with which the heathen, however far advanced in civilization, are altogether unacquainted,) and sanctions of reward or punishment according to the conduct of men in the present life. Upon that ground it is my conviction that Christianity supplies materials and machinery for promoting civilization, of the highest order."

Mr. Ellis then proceeds to corroborate these sentiments by instances drawn from the South Sea Islands, to which we shall have great pleasure in hereafter calling the attention of our readers.

It is well known that the excellent Society of Friends, (Quakers,) although foremost in every work of benevolence and philanthropy, and anxious to promote the civilization and happiness of men, are quite indisposed to co-operate, in any direct way, in the vigorous efforts for the evangelization of the world, which all other religious bodies are now making. This does not arise from any indifference to the diffusion of Christianity; but from the conscientious belief that the evangelization of the world, or of classes or individuals in it, is purely a spiritual work; that the Spirit of God not only will but does act cogently in due season, raising up and working through whatever agencies are deemed proper, without needing or approving our puny and prepared plans and operations, towards the accomplishment of a work which is purely and specially His own.

Now, of course, we think that these are sound principles worked out into most impotent practical conclusions. If we thought otherwise, this work need not have been undertaken. However, the Friends having excluded themselves from the field of direct missionary labor, have thrown themselves on other fields with all the more ardor, and have worked in them with untiring labor and perseverance. No one is ignorant how importantly they contributed to the (legal) abolition of the slave trade, and to the emancipation of the English slaves; and every one knows how much the Bible Society, and all plans for general education, have owed to their support. They have also taken interest in the civilization of barbarous nations; and have not been unwilling to co-operate with the missionaries as long as they understood that the means supplied by themselves were appropriated, not to spiritual teaching, but to education and civilization. And as they are not unwilling to consider means of this secondary character as tending in some degree to prepare the way of the Lord, their testimony as to the effect of such operations is of great value.

An American member of this body, Mr. Elisha Bates, was examined before the committee. He was asked—

"Have you had any opportunities of forming an opinion upon the subject of whether it is advisable, among savage tribes, to introduce civilization in

order to open the way for Christianity, or to begin with Christianity in order to facilitate the approach to civilization?—I think I have. The Society of Friends have been engaged, for many years past, in efforts for the civilization and improvement of several tribes of Indians in the United States.

"The plan which the Society of Friends adopted in their early intercourse with the [Shawnee] Indians, was to attempt civilization first. The religious communications, so far as I am informed, and I have made it a subject of some investigation, were those of a very general character, recognising the being of a God, and the accountability of man, but not with special reference to the peculiar doctrines of the Christian religion. An idea seemed to have been formed that civilization was to make way for the introduction of the doctrines of the Christian religion. The establishment to which I have had my attention more particularly directed was in the western part of the State of Ohio. At this place there has been during the last twenty or thirty years, (the precise time I cannot give,) a family maintained by the Society of Friends among the Indians, having steadily in view their improvement in civilization. In the year 1832 the Indians, having sold their reservation in the State of Ohio, removed to a location on the west of the Mississippi. About the time of their leaving that reservation, a delegation of the committee to which I have referred visited them; they were then in a state of some improvement in civilized life; they had made some advances in agricultural pursuits, and in an improved mode of living; and, in a council which they held, they expressed, in warm terms, their gratitude to the Society of Friends, and earnestly requested that we would continue our attention to them; in their peculiar phraseology, 'that we would hold them by the hand, and not let them go;' that is, continue our attention and kindness to them beyond the Mississippi. To this location we have concluded to follow them; but, within the last few years, we have had occasion to review the whole course of proceedings, and we have come to the conclusion, from a deliberate view of the past, that we erred, sorrowfully erred, in the plan which was originally adopted, in making civilization the first object; for we cannot count on a single individual that we have brought to the full adoption of Christianity."

The question, "What is this *civilization*, of which so much is said?" meets us at the very outset, and a difficulty seems to us to lie in the fact that two things perfectly distinct, and which may or may not be found together, are usually involved in the one name of "civilization;" so that in this, as in a thousand other matters, difficulties are created by the absence of a precise distinction of terms. These two things are—first, the civilization of the outward life, apart from any moral sentiments, good or bad: *this* is *civilization*, properly so called. The other is the amelioration of the moral sentiments, which has an important, but not an essential or inseparable connexion with the external civilization. Now, seeing that *civilization* properly describes a condition of outward life, and nothing else, it is an evil thing to

employ the same word for a condition of moral feeling; and if, therefore, the word must be retained, we should like to distinguish this last application of it as *civilization of heart*—say *heart civilization*:—but we would rather abandon this application of the word, and give to this moral condition the name of *HUMANIZATION*: and very properly; because the more a man advances in this condition, the more he resembles *man* as he originally came clean from the hands of his Maker.

CIVILIZATION describes that condition of life in which men abandon the wild life of savages and barbarians—of hunters, and even of shepherds; and cultivate the ground, build houses and towns, establish organized governments, and apply themselves to those arts which tend to increase the welfare and comforts of their condition. To this the fine arts, science, literature, philosophy, are in due time added, and form parts of the higher state of civilization. We do not say of "*true* civilization." All civilization is true, as distinguished from the savage and barbarous conditions; even as a blade of grass is not less a "*true*" plant than a rose, although they *differ* greatly.

To *this* civilization, *that* which we have called humanization is a crowning grace, an ornament, a beauty, a blessing;—essential to its blessedness, but not essential to its existence: and not further essential to its blessedness, than as it is essential to the blessedness of every condition.

What is meant by *HUMANIZATION*, no one, scarcely, need be told. There is not a point it would embrace which has not already been given by an apostle, in his description of the sort of character which *Christianization* produces. It is, then, "first pure, then peaceable, gentle, and easy to be entreated, full of mercy and good fruits, without partiality, and without hypocrisy." Some one or more of these qualities may be possessed by characters not yet humanized or Christianized—whether with or without civilization; but in the well humanized or well Christianized character, they are all combined and inseparably connected; and the interweaving of these fine golden threads in the fabric of civilized society produces that *humanized civilization* which is meant by that "*true civilization*," the imperfect exhibition of which in the best-conditioned communities is acknowledged and deplored.

Now, to prove that civilization may exist without humanization, we need only refer to Greece and Rome, whose highly civilized condition none who know anything will dispute. In our own day, China is undoubtedly a civilized country: but that it is not humanized, is sufficiently indicated by the prevalence of infanticide and of torturous punishments. In fact, look at the description which the Apostle Paul applies to the most civilized nations of antiquity, as evincing the general absence of the humanized character. In one distinct and horrifying statement he opens the mystery of their condition; and there is not one point of his enumeration which is not capable of the most ample corroboration from the surviving pages and pictured monuments of the countries to which he refers: "They became vain in their ima-

ginations, and their foolish heart was darkened! Professing themselves to be wise, they became fools, and changed the glory of the uncorruptible God into an image made like to corruptible man, and to birds, and four-footed beasts, and creeping things," &c.

These were the natural effects of a system, under which the religion, such as it was, involved no moral duties. The priests taught a religion without morality, and the philosophers taught a morality without religion; and both were equally inoperative upon the moral sentiments. This point it is useless to pursue further, for, whatever may be said for the civilization, the man does not live who will stand up in behalf of the humanization of the Greek, Roman, or Egyptian character.

And as civilization may exist apart from humanization, so may humanization exist apart from, at least, high civilization. Even in some of our own remoter villages, and among the Alpine valleys, there are people not more civilized, perhaps not so much civilized, certainly not more intelligent, and probably not better furnished with the comforts and arts of life than many of those dwellers in huts and cottages, whom we call "savages," when we speak of



Huts and Fence, New Zealand.

Africa or the South Seas; yet they are humanized, they are replete with all true affections, abhor cruelty, hate injustice, love mercy, and are full of probity, gentleness, and truth. They are sound at heart.

Since, therefore, humanization of character exists among people not highly civilized; since we could find no better description of the humanized character than in the description of the Christian character which the Apostle James has given; and since, in fact, the well humanized character is only to be found in a well Christianized community; it follows that *civilization* has no immediate and essential connexion with or result from Christianity; but that *humanization* springs, necessarily and immediately, from the principles which it inculcates, and the feelings which it cherishes. From no other religion does this spring. For there is no other religion which represents God in so many aspects of benignity to man—and therefore as an object of LOVE not less than of reverence. And this manifestation of God leads, by a most beautiful sequence, to the manifestation of man as an object of love—of diffused

benevolence to man, to all men, apart from all class, distinctions, or interests—apart from country, language, color, or clime.

From the benign and paternal relations of the Divine Being, who, in the Scriptures, is proposed as the object of our love; man is called upon to *love* God as well as to venerate him. This is made a duty; and as the man who loves God is sure to be right in other things, this is often stated as the abstract and compendium of all other duties. The two duties are thus intimately connected with the relation of cause and effect. This relation was perceived and enforced by the apostles. What an immense force of humanizing influences is contained in such a passage as this: "Beloved, let us love one another; for love is of God; and every one that loveth is born of God and knoweth God. He that loveth not, knoweth not God, for God is LOVE. In *this* was manifested the love of God towards us, because that God sent his only-begotten Son into the world, that we might live through him. Beloved, *if God so loved us, we ought also to love one another.*" Thus the man who loves God, as exhibited in the Scripture, loves also his brother—his neighbor; and if any one asks, "Who is my neighbor?" he may be referred to Christ's own answer to that question in the touching parable of the good Samaritan. Nor are we allowed to stop here—the humanization must be completed by a still greater commandment—altogether worthy of heaven from whence it came: "Ye have heard that it hath been said, Thou shalt love thy neighbor, and hate thine enemy. But *I say unto you, Love your enemies*, bless them that curse you, do good to them that hate you, and pray for them that despitefully use you and persecute you; that you may be the children of your Father which is in heaven; for He maketh his sun to shine on the evil and the good, and sendeth rain on the just and on the unjust."

These are grand and broad principles; and we might also contemplate some of their more special applications. Who are they whom Jesus himself pronounced blessed above all men? The meek, the merciful, the pure in heart, the peacemakers; and we have numerous parallel passages, which will readily occur to the readers of the sacred oracles. In reading them we are perfectly sure that no one can entertain the least doubt that humanization of a high and peculiar order is a necessary and inseparable effect of Christianization:

"So, in the guilty breast, when heavenly grace
Enters, it ceases not till it uproot
All evil passions from each hidden cell,
Planting again an Eden in their place,
Which yields to men and angels pleasant fruit,
And God himself delighteth there to dwell."

And this is Christian humanization.

In expressing an opinion that Christianity has no direct, immediate, and necessary bearing on civilization, properly so called, we must take some pains that our meaning should not be misunderstood.

It were equally idle, now, to affirm as to deny that Civilization is, in itself and for this stage of our existence, a great good and blessing, tending to make

this life pleasant and comfortable, and to exalt and beautify the condition of man in this world. Yet it happens that Christianity, although a religion of supreme benevolence, takes no direct interest in this matter. Any other religion, almost, might take more. Judaism might have taken more—since its sanctions were taken mostly from this world; and blessings of the basket and the store, of the breast and of the womb, long life, comfort, honor in this world, were the more conspicuous rewards of obedience. Under this system there was every inducement to improve the condition in life. Under a system which denied a future life, which teaches that in this life only we have hope, there would be still greater inducement, and encouragement, to emigrate in this world our only state of conscious existence. But Christianity offers no inducement of this sort. It teaches that the state of man in this life is that of a probationer for a higher and better life: and that the period of his probation is but a speck in comparison with the great future which lies before him. It is to that future that it directs man's attention—for that he is to strive, for that to labor. Its constant fear is lest man should forget this—lest he should be disposed to forget his state as a probationer, and make this world—beautiful, however ruined,—and this

“Life, with all its burdens dear,”

his rest. The world it regards as a seducer, tempting the believer to forget his pilgrim state, and to make him careless of that home and “better country” to which he travels. It is therefore but little heedful to make that seduction the more seducing. Yet the operation of this peculiar doctrine has little real effect *as against civilization*. It may have the effect of making missionaries and others, who are the more seriously impressed with those truths, reluctant to exert themselves in diffusing benefits of so secondary a nature; but it does not tell as to any opposition of Christianity, in principle, to civilization. “The world” against which Christianity warns the citizens of heaven, is not this or that condition of life; but it is that which, in any condition of life, most draws the heart away from God and heaven. Civilization does not do this more than barbarism: for although civilization be in itself the happier condition, happiness itself is, through the bounty of God, very independent of condition; and comparing individuals, we do not find that the most civilized man is more attached to “the world,” or more reluctant to leave it, than the barbarian. The jackall which devours the offal, and the vulture which revels in the carrion, think their fare as good and wholesome as the lion which draws the life-blood, and enjoys the first-fruits of slaughter.

Having thus represented the only point of view in which Christianity can be regarded unfavorable or indifferent to civilization, it behooves us to indicate other circumstances in which the influence of the Christian faith is decidedly and unquestionably favorable to the improvement of man's intellectual and personal condition in this life. In the first place,

Christianity is universal in its character and effects. Its wonderful adaptiveness to all possible conditions and circumstances, only now begins to be fully developed, and offers a matter full of instructive meditation to the thinking mind; and, to such a mind, affords a beautiful set of evidences for the divine origin of our religion. As society has advanced, all other religions have been found full of obsolete notions, and impracticable exactions—the result of which has been that the more advanced class of people have always outgrown the religion of their country. But Christianity is always in advance of our advancement. Proceed as far as we can, it is before us; mount as high as we can, it is above us; and, in fact, it would seem that while the system has always made its essential matters intelligible to, and full of comfort and encouragement for, even the lowest conditions of intellectual and social life, it has always contained much matter to be unlocked and developed by progressive circumstances, so that Christianity itself may be said to have been, and to be, *progressive*; and we believe it will be so to the end of time.

Christianity is undoubtedly friendly—more than friendly, to education and literature. The will of God is embodied in a book, with which every one is encouraged and required to make himself acquainted. He who would obtain all the encouragement and knowledge which may be obtained from that book, as translated into his own tongue, must be able to read, and he who can read one book can read any. Then, he who, not content with the necessarily interpretative character of a translation, would seek his knowledge of divine things at the fountain head, must acquire at least one foreign language, (Greek,) the most expressive in the world; and the acquisition of one language opens the door for many others. It is thus that Christianity, by the mere mode in which it records the will of God, offers a rich premium upon common education, and one richer still upon high education.

And, besides, Christianity is not only thus favorable to the culture of the intellectual as well as of the moral perceptions, but it is even more directly favorable to the culture of the intellectual faculties by demanding their exercise. Christianity appeals almost as much to the mind as to the heart; its reasonings, always invincible, are often so close, although seldom obscure, as to require great attention, and some grasp of mind, to apprehend their full scope and connexion. Undoubtedly the Bible has done more to advance the intellect of man, in all its true and lawful exercises, than all the other books in the world taken together.

Again, although we are not anxious to prove that the religion of Jesus takes thought immediately for those changes of condition which civilization produces, there is not the least difficulty in showing that its ultimate effect is highly favorable to improving changes, although it does not demand such changes, or make them essential. *Per se*, there is not the least reason why a hunting or pastoral people should not be as good Christians as a highly civilized people. There are vast tracts of country which would



Bedouin Encampment.

not be occupied at all, if not by hunting and pastoral tribes, whose condition of life is therefore as useful, in its place, as any other.

As a settled inhabitant of Ur, Damascus, Hebron, or Salem, the tent-dwelling Abraham could not better than he did have manifested the qualities which were most acceptable to the Almighty, and which procured him the glorious titles of the "Father of the Faithful," the "Friend of God." This, therefore, is not a matter in which Christianity will directly interfere.

But ultimately and indirectly its *influence* is certain and most effective. Its *direct* effect, as we have abundantly shown, is humanization. But the qualities which constitute the humanized character—making man meek, forgiving, peaceful, patient, courteous, kind, temperate, industrious, honest, and steady—are qualities incompatible with a barbarous condition of life, but are such as cannot fail to better the condition of every man who receives them. This we see daily in individuals, nor have national examples been altogether wanting. Thus, therefore, although it may be found that Christianity does not immediately civilize, it puts men in a condition of readiness to take advantage of whatever circumstances favorable to civilization occur in the progress of events.

The incident that nations which seek to diffuse the Christian faith are the most civilized nations in the world, cannot fail to produce a connexion between civilization and Christianity, such as we see in the South Sea islands, and such as we shall, we trust, see in New Zealand. Some will object to the word "incident," being disposed to consider the civilization of these nations as an effect of Christianity. But we have shown that although it does certainly

humanize such nations, it has by itself little effect in civilizing them. Not to refer again to the ancient examples, it is clear that printing and gunpowder would have been invented—that the mariner's compass, the New World, the passage by the Cape, the true system of the universe, the circulation of the blood, and the powers and applications of steam, would have been discovered—without Christianity; and these are the things which, in connexion with the humanizing results of Christianity itself, have, under Divine Providence, been the instruments of raising the principal Christian nations to that condition of high civilization in which they now stand.

In the first preaching of the Gospel, circumstances were the very reverse of what they are now. Then, the men who were in possession of the treasure of Divine truth, with the commission to make it known in the world, belonged to a nation far less civilized, although (through the institutions of Moses) considerably more humanized, than the principal nations to which it was to be proclaimed. This is probably one reason that there is little if anything said in the New Testament which can be construed to bear directly on the question of civilization, seeing that the nations to be converted already possessed all the civilization which was then known in the world.

Hence, while the missionary of our day has the advantage, whatever estimate be formed of its value, of being, through his civilization, the admitted superior of any heathen whom he may seek to benefit,—the first missionaries, who had not this means of drawing attention, must have seemed inferior, in these very points, to those whom they labored to save. We have often thought that it was for *this* reason as much as for any other, that the first preachers of the

Gospel were gifted with miraculous powers—which powers ceased as soon as the disparity was removed by the succession of competent native teachers, who had less need of the advantage. Let not, therefore, the modern missionary mourn the discontinuance of miraculous gifts; seeing that his civilization gives him nearly the same superiority over those to whom he is sent—nearly as strong an introductory claim to attention—as only miracles could give to the primitive missionaries.

The fact that the civilization of the missionary tends to the civilization of the converts, needs little proof. We have already shown that Christianity produces a class of habits and sentiments favorable to the operation of civilizing influences. Now, the civilization of the missionary is a highly civilizing influence upon such as have already submitted to his teaching in higher matters. It will not be possible for them but to desire to have some share in those other advantages which the missionary so sensibly enjoys—unless the missionary, by his mode of living, makes the disparity so great as to render imitation, to the natives, a visionary thing. This should not be done. By showing, in his own practice, improved uses of their own products and commodities, and by exhibiting in his own house and person models of the form of life which he thinks best suited for the people, and which are suited to the climate and country, he will do far more than by displaying to their view the probably impracticable and inexpedient usages and utensils of *European* civilization. Civilization is not a form, but a reality capable of receiving *any* form which the climate and products of any particular country may dictate. Missionaries and others, perhaps, fall much into the habit of considering their own form of civilization as of the very substance of civilization itself; and to regard as essential to the *thing*, that which is only essential to the *form* it bears among ourselves. The exigencies of climates and products will most certainly produce great variations in the *forms* of civilization, between tropical, temperate, and polar countries, even while the actual civilization is, or may be, equally real in all. Allowances must be made for all these things. It is essential to even the lowest forms of civilization that men should be clothed, should have the use of money, should not depend on the spontaneous bounties of nature for their food; but it is by no means essential, even to the highest form, that they should wear hats, sit on chairs, eat with forks, or shave their beards.

Again, the missionary himself, although he may not professedly devote himself to the work of civilization, will, from his generally benevolent state of feeling, and from his desire to be useful in every way, and to render the objects of his care all the benefit in his power, be certain to neglect no opportunity of giving all the information he possesses respecting better utensils and modes of agriculture, building, medicine, and in the various arts. Also, wherever his influence reaches so far, he has never been found backward in endeavoring to procure the rectification of whatever principles or practices act injuriously for the public weal, or unjustly to any class of men.

Nor would we that, by too rigid an interpretation of his duties, he should consider himself precluded from such operations. It is true that the concerns of this world are, to the individual, of small moment as compared to those which affect his eternal position in “the world to come.” But matters of this character cannot be fairly contemplated with an exclusive reference to their bearing on individuals. Society is made up of masses of individuals, and its interests are questions of ages, not of years; and persons who might see their course clearly with reference to individual men, may find cause to ponder when they come to contemplate this larger view of the case. Besides, we are all but too apt to make what are very properly the *principal* objects, the *exclusive* objects of our care. But, in fact, God has many works in this world besides his saving work. Such is every effort which has for its object the welfare or peace of man, even in this life; and we do not clearly understand on what grounds any right-minded man can refuse such objects a share of his attention, however strongly he may hold, as we do, that the salvation of souls should be the paramount object of his care; and, in fact, he cannot. Circumstances, too strong for control, will always prevent him, among civilized nations, from resting exclusively upon the obligations of his spiritual office. The difficulty of getting any other persons disposed to act as civilizers; and still more, the difficulty of getting any other civilized men to act in behalf of the uncivilized, whose motives shall be equally, to them, free from all suspicion of gainful designs and territorial encroachments—these are circumstances which will act with the force of a compulsion; and this compulsion will become irresistible to the missionary among *savage* nations, by the consideration that to civilize is the only way to preserve their existence. We may lament it—we may disclaim it—we may strive against it—but there is nothing rendered more certain by all past experience than the fact, that it is the ultimate destiny of all uncivilized and savage men to disappear before the civilized. Instead of sitting down in sorrow and wringing our hands at the reacting guilt and misery of men, let us quietly consider that the constant recurrence of the same results under the same or analogous circumstances is indicative of the presence of a *LAW* in the social history of man; which law it behooves us to investigate and study well. We shall then discover that whenever two antagonist or anomalous conditions of society are brought into contact with each other, it is inevitable that the weaker, more or less gradually, disappear before the stronger. The stronger is the civilized; the weaker “the noble savage,” whose individual prowess, whose well-knit frame, whose undaunted heart, might seem his safeguard against extinction. But such is most certainly his doom: nor for its fulfilment are wrong and outrage, battle and slaughter, necessary. The mere contact of the civilized man, is new life or is death to him. From that contact he takes a new form of existence; or, which more usually happens, the well-spring of his life is poisoned by it, and he dies, pines away, withers, without hand. Is not the salvation of the barbarian from this his earthly doom, an object

worthy the labor of even a missionary? It is he who in general first finds his way among such people, long before they came into this terrible contact with civilization: and if, through the divine blessing upon his labors, they are already civilized when that time of fiery trial comes, they will be in a condition to maintain their separate existence as a nation, and as such to grow and multiply: or if even they have then only received the seeds of civilization, these seeds will most probably germinate speedily under that glowing and no longer uncongenial heat, and sprout, and blossom, and yield much fruit. And although a nation thus acted upon, in a prepared state for such action, may not be able, or may not desire, to maintain its distinct existence, we may feel assured that it cannot perish; but, by means of the assimilations it has acquired, will readily blend with, and be absorbed in, the superior mass—becoming a part of its strength and of its being.

The missionary, if he confine himself to the great work of Evangelization, will bring his people into a state of preparedness for civilization; and what more he does is rather his work as a civilized man than as a missionary. The operations are separable, and in many cases, perhaps whenever practicable, ought to be separated. But these operations might be concurrent; though it would seem better that the civilizer should work upon the foundation which the missionary has laid. But, besides and apart from the spiritual and humanizing work of the missionary, there are duties which the civilized owes to the uncivilized man; and these, as it seems to us, the missionary is bound to discharge, if there is no one else in the field to relieve him from them. The higher duty does not exonerate him from the lower, unless the two are incompatible, which in this case they do not appear to be. We hear the most of this difficulty from the missionary societies, who manifest much reluctance to employ their funds and the time of the missionaries in purposes of this secondary importance: With laudable conscientiousness, they apprehend that those who give their money for a spiritual purpose, may be dissatisfied at any portion of it being devoted to temporal objects. We believe, however, that most of those who subscribe to missionary societies connect in their minds and objects the reception of the Gospel with such temporal ameliorations as can only be produced by civilization: and we may declare that it has never happened to us to meet with any such objections—except from the societies themselves, when accounting for increased expenditure, or calling for increased resources.

Notwithstanding the self-denying protests under which the societies are wont to act in such matters, we have no doubt that missionaries will be constrained by circumstances, and by the obligations which they feel as civilized men among the uncivilized, to be what they ever have been, "the best of civilizers." We had almost said "the *only* civilizers," but recollected "The Society for the Civilization of Africa," which has just commenced its operations. This society, founded and chiefly supported by religious men, invites the assistance of missionaries, but feels precluded, by denominational differences, from

making Evangelization an essential and primary part of its own plan. Such men as compose this society feel practically, although they do not make the distinction, that the humanizations which they desire to introduce can only be raised in the crude mass of African character by the leaven of Christian principles. Civilization would effect all their more external objects; and if there be any ultimate failure, the blame must be laid not to the deficient power of civilization, but to some lurking error in the particular plan of operations. We hope, very sincerely, that no such error will be found, or that if found it will be rectified, and the whole of a noble enterprise not abandoned for its sake.

HALLOWED BE THY NAME.

BY MISS ELIZA COOK.

List to the dreamy tongue that dwells
In rippling wave or sighing tree;
Go, hearken to the old church bells,
The whistling bird, the whizzing bee;
Interpret right, and ye will find
'Tis "power and glory" they proclaim:
The chimes, the creatures, waters, wind,
All publish "Hallowed be Thy name!"

The pilgrim journeys till he bleeds,
To gain the altar of his sires;
The hermit pores above his beads,
With zeal that never wanes nor tires;
But holiest rite or longest prayer
That soul can yield or wisdom frame,
What better import can it bear,
Than, "Father! hallowed be Thy name!"

The savage kneeling to the sun,
To give his thanks or ask a boon;
The raptures of the idiot one
Who laughs to see the clear round moon;
The saint well taught in Christian lore,
The Moslem prostrate at his flame—
All worship, wonder, and adore;
All end in "Hallowed be Thy name!"

Whate'er may be man's faith or creed,
Those precious words comprise it still;
We trace them on the blooming mead,
We hear them in the flowing rill;
One chorus hails the Great Supreme;
Each varied breathing is the same.
The strains may differ; but the theme
Is, "Father! hallowed be Thy name!"

INCREASING VALUE OF BOOKS.—Unlike most other species of property, books in some instances advance in value in proportion to their age: the most remarkable case on record is that of the great sale of Lord Roxburgh's library in 1812, which occupied forty-five days at auction, and which cost its founder, fifty years before, less than £5000, but which actually realized the enormous sum of £23,341. One book, the folio (first) edition of Boccaccio printed by Valdarfer, of which it is believed this was the only copy extant, brought £2,260! Its first cost was probably about ten shillings.

ON THE ADVANTAGES OF EDUCATION.

THE inestimable advantages of EDUCATION cannot, perhaps, be more properly explained than by considering it in its most extensive sense as applied to almost every object in NATURE.

In every production of Nature there are numerous latent qualities which it is the province of enlightened men to draw forth and bring to light; this is properly EDUCATION, which is derived from the Latin word *educō*, to lead or draw forth. Thus, in the block of marble, while it lies in the quarry, is contained the exquisite statue or the magnificent vase; but it is the chisel and the art of the statuary that bring it forth to view, without which it would have been for ever invisible to mortal eyes.

The Almighty has graciously provided every thing in this world that can conduce to the benefit of all his creatures: but, having endowed man with the faculty of *reason*, he has, in his wisdom, left many of these benefits undeveloped, for the purpose of exercising that reason, and calling forth that skill which would otherwise lie dormant and useless. Thus, gold and jewels lie hidden in the obscurity of the mine, until brought to light by human industry; and even when thus produced, they will not display their beauty and lustre until one is refined and the other polished; this may be called their *education*, the drawing forth their qualities to view.

In the *vegetable world* we see the great importance of education in the improvement which takes place in plants, fruits, and flowers, from judicious cultivation. Compare the wild plants of the woods and wilderness with those of the same genus, that have been reared in gardens with care and skill;—compare the wild berries of the copse and hedge-rows, the crabs and sloes, with the variety of delicious apples, plums, peaches, nectarines, &c. which hang on the branches of cultivated trees, and grow on the walls of well-managed gardens, and we shall see some of the advantages of EDUCATION. To it we owe the staff of life, BREAD; for were it not for cultivation, *wheat* would have been merely an insignificant grass, fit only for the browsing of cattle.

In the *animal world*, education is exercised in various ways. Mere instinct is not all that animals, denominated irrational, have to trust to; it is infallible as far as it goes, and would probably of itself enable creatures that are under its influence more easily to provide for themselves than human beings can. But close observers of nature are well aware that parent animals instruct their young in many useful particulars, for which instinct alone would be inadequate. Birds have been seen teaching their nestlings to fly, and pointing out to them the places and manner in which their food is to be procured; and thus bestowing on them the education they need.

Indeed, not a doubt can exist in the mind of a well-informed naturalist, that the inferior animals have a means of conveying a much greater number of ideas to each other than the generality of mankind are willing to allow them. Thus, in a country where man predominates over the wild inhabitants of the forest, a lion will, on first meeting with his formidable an-

tagonist, show evident signs of fear. Yet his only knowledge of the power of man must have been received from some of his own species that had experienced it. On the contrary, in solitary deserts, where the foot of man seldom treads, a lion will fearlessly attack numbers undismayed, because unacquainted with the deadly nature of their weapons. Again, in inhabited countries, birds that have just left the nest will fly at the approach of man, though the first time of seeing him; while it is a well known fact, that in some newly discovered islands, where man was unknown, the birds had no dread of the sailors that landed, but suffered themselves to be struck on the head without attempting to move out of the way. This state of things, however, lasted not long; the birds soon discovered that an enemy was amongst them, and became as shy of the approach of man as in populous countries.

From these and other circumstances it being evident that brutes have a species of language, or at least a method of communicating their few ideas to each other; we have no reason to doubt that parents bestow an education on their young, sufficient to enable them, at a proper age, to protect and provide for themselves; and, when this is done, their concern for them ceases.

There is little reason to doubt that many species of animals were created for the use of man, and by their corporeal excellences to supply his deficiencies. In strength, in swiftness, in keenness of sight and hearing, man is vastly inferior to the elephant, the horse, the dog, and many other animals. Having, however, the superiority over them by the power of reason, he applies their good qualities to his own use, and renders them subservient to his own purposes.

But without education this cannot be done. The mere uninstructed strength of the elephant, speed of the horse, and sagacity of the hound, would be injurious rather than beneficial to his master; but when, by proper instruction, the animal has learned to be obedient to his guide, to employ his talents in their proper time, place, and manner, and to understand the words and signs that are intended for his direction; then, and not till then, he is capable of answering the end for which he was designed, and becomes a valuable auxiliary in many profitable and interesting pursuits. In these respects education is indispensable.

But if education be of such importance in improving and rendering fit for human use the plants and fruits of the field, the treasures of the mine, and the animals designed for the service of man; how much more necessary is it, and to how much greater an extent may it be carried, when man is the subject of it, who possesses a body susceptible of being taught an immense multitude of valuable arts, and a mind to the capabilities of which no boundary has been yet discovered!

Education is essentially necessary to draw forth the physical powers of man, and to enable him to execute with skill works in which the mind has but little share. The body of man, in itself feeble and inert when compared with those of many inferior animals, becomes wonderfully expert and active when improved by the exercise of its powers.

How hopeless to an uninstructed person does the acquisition of perfect skill in playing on musical instruments, of successfully performing difficult tricks of legerdemain, of throwing the body into all sorts of postures, of vaulting and tumbling, and a thousand other feats of dexterity appear! But let that person, at a proper age, before his muscles are become rigid by time, be put under a proper course of tuition and practice, and he will be astonished at his own progress. He will find that in the body are latent energies, which require to be called forth by education, or they will be for ever dormant and useless. Every species of handicraft is an illustration of this doctrine. That the mind is of infinitely greater importance than the body, is universally allowed. If, then, the *Mind* is the sovereign director of all our actions, how essential is it that that mind should be rendered properly qualified for the task, and enabled to form a sound judgment of things submitted to its cognizance.

From these observations we learn, that education is essentially necessary to the comfort and prosperity of every human being, and that improved methods of imparting it should be frequently adopted as they are suggested by improvements in arts and science.

To dilate here on the advantages of education would be almost as futile as to attempt to prove, by argument, self-evident truths.

That by education a person is taught to conduct himself in his station in society with decorum and propriety; that he is enabled thereby to discern his duties, and the proper method of fulfilling them; that he learns to avoid errors and mistakes by profiting by the experience of others; and that his mind is expanded, his sentiments are liberalized, and his heart improved, is too evident to need any other proof than observation. Ignorance is the parent of brutality, superstition, and bigotry. It frequently induces a blind and obstinate commencement of, and perseverance in, measures diametrically opposed to the good of the individual, and to the community at large. To reason with ignorance is unavailing, because it is incapable of comprehending the force of argument. To prevent the injuries of which it is capable it must be destroyed.

The art of educating requires skill in fostering a love of mental activity and a desire of knowledge. The Self-Instructor must obey the impulse of the desire already formed. Under the guidance of a tutor we may have the advantage of commencing no study till we are versed in introductory subjects sufficiently to prevent our being discouraged by insurmountable obstacles. When teaching ourselves, we are often impelled to plunge at once into matters which we afterwards find require us to enter upon the study of elementary truths, and which sometimes present difficulties that compel us to abandon, or at least postpone for a time, the object of our investigation. The real friend to the intellectual progress of his fellow-men will be careful to bear in mind this difference, as a guard against any disposition to discourage the premature efforts of students, and still more against the injustice of sneering at an apparent fickleness. An eminent linguist and biblical scholar

has conferred an invaluable obligation, by encouraging the studious to disdain the difficulties by which classical studies have been encumbered, by saying, "Two rules, *Begin*, and *Keep on*, will be sufficient to enable you to learn any language."

SELF-EDUCATION.—Benjamin Franklin was a self-made man. So was Benjamin West. The one among the most distinguished philosophers, the other one of the best painters the world ever saw. Each had a good teacher, because each taught himself. Both had a better teacher daily, because both were advancing daily in knowledge and in the art of acquiring it.

Baron Cuvier was also a self-made man. He was at all times under a good teacher, because he was always taught by Baron Cuvier. He more than any other man, perhaps than all other men before him, brought to light the hidden treasures of the earth. He not only examined and arranged the mineral productions of our globe, but ascertained that hundreds, and even thousands of different species of animals, once living and moving in the waters and upon the land, now form rocks, ledges, and even mountains. Cuvier thought, however, that he owed a constant debt of gratitude to his mother for his knowledge, because when a small child she encouraged him in linear drawing, which was of the utmost service in his pursuits. To the same encouragement the world is, of course, indebted for the knowledge by Cuvier among all nations.

Sir Humphrey Davy, by "self-instruction," made more brilliant and more important discoveries in chemical science, than any one who preceded or followed him. Farmers, mechanics, housekeepers, and many others, are now enjoying the benefit of his labors.

Elihu Burritt, by self-instruction, had acquired, at the age of thirty years, fifty languages; and that, too, while he was laboring vigorously over the forge and anvil, from six to twelve hours daily.

George Washington was a self-made man. His name will fill all future ages with reverence.

PHYSIOLOGICAL FACTS.—The number of bones in the frame-work of a human body is 260, 108 of which are in the feet and hands, there being in each 27.

The quantity of blood in adults is on an average about 30lbs., which passes through the heart once in four minutes.

Only one tenth of the human body is solid matter. A dead body weighing 120lbs. was dried in the oven till all moisture was expelled, and its weight was reduced to 12lbs. Egyptian mummies are bodies thoroughly dried; they usually weigh about 7lbs.

The lungs of an adult ordinarily inhale 40 cubic inches of air at once, and if we breathe 20 times in a minute, the quantity of air consumed in that time will be 800 cubic inches, or 48,000 inches an hour, and 1,152,000 inches in a day, which is equal to eighty-six hogsheds.



RURAL FUNERALS.

"Here's a few flowers! but about midnight more:
The herbs that have on them cold dew o' the night
Are strewings fittest for graves—
You were as flowers now withered; even so
These herblets shall, which we upon you strow."

CYMBELINE.

Among the beautiful and simple-hearted customs of rural life which still linger in some parts of England, are those of strewing flowers before the funerals, and planting them at the graves of departed friends. These, it is said, are the remains of some of the rites of the primitive church; but they are of still higher antiquity, having been observed among the Greeks and Romans, and frequently mentioned by their writers, and were, no doubt, the spontaneous tributes of unlettered affection, originating long before art had tasked itself to modulate sorrow into song, or story it on the monument. They are now only to be met with in the most distant and retired places of the kingdom, where fashion and innovation have not been able to throng in, and trample out all the curious and interesting traces of the olden time.

In Glamorganshire, we are told, the bed whereon the corpse lies is covered with flowers, a custom alluded to in one of the wild and plaintive ditties of Ophelia:—

"White his shroud as the mountain snow,
Larded all with sweet flowers;
Which be-wept to the grave did go,
With true love showers."

There is also a most delicate and beautiful rite observed in some of the remote villages of the south, at the funeral of a female who has died young and unmarried. A chaplet of white flowers is borne be-

fore the corpse by a young girl nearest in age, size, and resemblance, and is afterwards hung up in the church over the accustomed seat of the deceased. These chaplets are sometimes made of white paper, in imitation of flowers, and inside of them is generally a pair of white gloves. They are intended as emblems of the purity of the deceased, and the crown of glory which she has received in heaven.

In some parts of the country, also, the dead are carried to the grave with the singing of psalms and hymns: a kind of triumph, "to show," says Bourne, "that they have finished their course with joy, and are become conquerors." This is observed in some of the northern counties, particularly in Northumberland; and it has a pleasing, though melancholy effect, to hear, of a still evening, in some lonely country scene, the mournful melody of a funeral dirge swelling from a distance, and to see the train slowly moving along the landscape

"Thus, thus, and thus, we compass round
Thy harmlesse and unhaunted ground,
And as we sing thy dirge, we will
The Daffodill
And other flowers lay upon
The altar of our love, thy stone."—HERRICK.

There is also a solemn respect paid by the traveller to the passing funeral in these sequestered places; for such spectacles, occurring among the quiet abodes of nature, sink deep into the soul. As the mourning train approaches, he pauses, uncovered, to let it go by; he then follows silently in the rear, sometimes quite to the grave, at other times for a few hundred yards, and having paid this tribute of respect to the deceased, turns and resumes his journey.

The rich vein of melancholy which runs through the English character, and gives it some of its most touching and ennobling graces, is finely evidenced in these pathetic customs, and in the solicitude shown



by the common people for an honored and a peaceful grave. The humblest peasant, whatever may be his lowly lot while living, is anxious that some little respect may be paid to his remains. Sir Thomas Overbury, describing the "faire and happy milk-maid," observes, "Thus lives she, and all her care is, that she may die in the Spring-time, to have store of flowers stucked upon her winding-sheet." The poets, too, who always breathe the feeling of a nation, continually advert to this fond solicitude about the grave.

The custom of decorating graves was once universally prevalent; osiers were carefully bent over them to keep the turf uninjured, and about them were planted evergreens and flowers. "We adorn their grave," says Evelyn, in his *Sylva*, "with flowers and redolent plants, just emblems of the life of man, which has been compared in Holy Scriptures to those fading beauties, whose roots being buried in dishonor, rise again in glory." This usage has now become extremely rare in England; but it may still be met with in the churchyards of retired villages, among the Welsh mountains: an instance of it once occurred at the small town of Ruthen, which lies at the head of the beautiful vale of Clewyd. At the funeral of a young girl in Glamorganshire, the female attendants had their aprons full of flowers, which, as soon as the body was interred, they stuck about the grave.

Several other graves were decorated in the same manner. As the flowers had been merely stuck in the ground, and not planted, they had soon withered, and might be seen in various states of decay; some drooping, others quite perished. They were afterwards to be supplanted by holly, rosemary, and other evergreens; which on some graves had grown to great luxuriance, and overshadowed the tombstones.

There was formerly a melancholy fancifulness in the arrangement of these rustic offerings, that had something in it truly poetical. The rose was sometimes blended with the lily, to form a general emblem of frail mortality. "This sweet flower," said Evelyn, "borne on a branch set with thorns, and accompa-

nied with the lily, are natural hieroglyphics of our fugitive, umbratile, anxious, and transitory life, which, making so fair a show for a time, is not yet without its thorns and crosses." The nature and color of the flowers, and of the ribands with which they were tied, had often a particular reference to the qualities or story of the deceased, or were expressive of the feelings of the mourner. In an old poem, entitled "*Corydon's Doleful Knell*," a lover specifies the decorations he intends to use:—

"A garland shall be framed
By Art and Nature's skill,
Of sundry-coloured flowers,
In token of good-will.

And sundry-coloured ribands
On it I will bestow;
But chiefly blacke and yellowe
With her to grave shall go.

I'll deck her tomb with flowers,
The rarest ever seen;
And with my tears as showers,
I'll keep them fresh and green."

The white rose, we are told, was planted at the grave of a virgin; her chaplet was tied with white ribands, in token of her spotless innocence; though sometimes black ribands were intermingled, to bespeak the grief of the survivors. The red rose was occasionally used in remembrance of such as had been remarkable for benevolence; but roses in general were appropriated to the graves of lovers. Evelyn tells us that the custom was not altogether extinct in his time, near his dwelling in the county of Surrey, "where the maidens yearly planted and decked the graves of their defunct sweethearts with rose-bushes." And Camden likewise remarks, in his *Britannia*: "Here is also a certain custom, observed time out of mind, of planting rose-trees upon the graves, especially by the young men and maids who have lost their loves, so that this churchyard is now full of them."

When the deceased had been unhappy in their loves, emblems of a more gloomy character were used, such as the yew and cypress; and if flowers

were strewn, they were of the most melancholy colors. Thus, in poems by Thomas Stanley (published in 1651), is the following stanza :—

“ Yet strew
Upon my dismall grave
Such offerings as you have,
Forsaken cypresse and sad yewe ;
For kinder flowers can take no birth
Or growth from such unhappy earth.”

The natural effect of sorrow over the dead is to refine and elevate the mind ; and we have a proof of it in the purity of sentiment, and the unaffected elegance of thought, which pervaded the whole of these funeral observances. Thus, it was an especial precaution, that none but sweet-scented evergreens and flowers should be employed. The intention seems to have been to soften the horrors of the tomb, to beguile the mind from brooding over the disgraces of perishing mortality, and to associate the memory of the deceased with the most delicate and beautiful objects in nature. There is a dismal process going on in the grave, ere dust can return to its kindred dust, which the imagination shrinks from contemplating ; and we seek still to think of the form we have loved, with those refined associations which it awakened when blooming before us in youth and beauty. “ Lay her i' the earth,” says Laertes of his virgin sister,—

“ And from her fair and unpolluted flesh
May violets spring !”

Herrick, also, in his *Dirge of Jephtha*, pours forth a fragrant flow of poetical thought and image, which in a manner embalms the dead in the recollections of the living :—

“ Sleep in thy peace, thy bed of spice,
And make this place all Paradise :
May sweets grow here ! and smoke from hence,
Fat frankincense.
Let balme and cassia send their scent
From out thy maiden monument.
• • • • •
May all shie maids at wonted hours
Come forth to strew thy tombe with flowers !
May virgins, when they come to mourn,
Male incense burn
Upon thine altar ! then return
And leave thee sleeping in thine urn.”

Numerous extracts from the older British poets might be made, who wrote when these rites were more prevalent, and delighted frequently to allude to them ; but we have already quoted more than is necessary. We cannot, however, refrain from giving a passage from Shakspeare, even though it should appear trite, which illustrates the emblematical meaning often conveyed in these floral tributes, and, at the same time, possesses that magic of language and appositeness of imagery for which he stands pre-eminent.

“ With fairest flowers,
Whilst summer lasts, and I live here, Fidele,
I'll sweeten thy sad grave ; thou shalt not lack
The flower that's like thy face, pale primrose ; nor
The azured harebell like thy veins ; no, nor
The leaf of eglantine ; whom not to slander,
Outwestened not thy breath.”

There is certainly something more affecting in these prompt and spontaneous offerings of nature, than in the most costly monuments of art ; the hand strews the flower while the heart is warm, and the tear falls on the grave as affection is binding the osier round the sod ; but pathos expires under the slow labor of the chisel, and is chilled among the cold conceits of sculptured marble.

It is greatly to be regretted, that a custom so truly elegant and touching has disappeared from general use, and exists only in the most remote and insignificant villages. But it seems as if poetical custom always shuns the walks of cultivated society. In proportion as people grow polite, they cease to be poetical. They talk of poetry, but they have learned to check its free impulses, to distrust its sallying emotions, and to supply its most affecting and picturesque usages, by studied form and pompous ceremonial. Few pageants can be more stately and frigid than an English funeral in town. It is made up of show and gloomy parade ; mourning carriages, mourning horses, mourning plumes, and hireling mourners, who make a mockery of grief. “ There is a grave digged,” says Jeremy Taylor, “ and a solemn mourning, and a great talk in the neighborhood, and when the daies are finished, they shall be remembered no more.” The associate in the gay and crowded city is soon forgotten ; the hurrying succession of new intimates and new pleasures effaces him from our minds, and the very scenes and circles in which he moved are incessantly fluctuating. But funerals in the country are solemnly impressive. The stroke of death makes a wider space in the village circle, and is an awful event in the tranquil uniformity of rural life. The passing bell tolls its knell in every ear ; it steals with its pervading melancholy over every hill and vale, and saddens all the landscape.

The fixed and unchanging features of the country, also, perpetuate the memory of the friend with whom we once enjoyed them ; who was the companion of our most retired walks, and gave animation to every lonely scene. His idea is associated with every charm of nature ; we hear his voice in the echo which he once delighted to awaken ; his spirit haunts every grove which he once frequented ; we think of him in the wild upland solitude, or amid the pensive beauty of the valley. In the freshness of joyous morning, we remember his beaming smiles and bounding gayety ; and when sober evening returns with its gathering shadows and subduing quiet, we call to mind many a twilight hour of gentle talk and sweet-souled melancholy.

“ Each lonely place shall him restore,
For him the tear be duly shed ;
Beloved, till life can charm no more ;
And mourn'd till pity's self be dead.”

Another cause that perpetuates the memory of the deceased in the country is, that the grave is more immediately in sight of the survivors. They pass it on their way to prayer ; it meets their eyes when their hearts are softened by the exercises of devotion ; they linger about it on the Sabbath, when the mind is disengaged from worldly cares, and most

disposed to turn aside from present pleasures and present loves, and to sit down among the solemn mementoes of the past. In North Wales the peasantry kneel and pray over the graves of their deceased friends for several Sundays after the interment; and where the tender rite of strewing and planting flowers is still practised, it is always renewed on Easter, Whitsuntide, and other festivals, when the season brings the companion of former festivity more vividly to mind. It is invariably performed by the nearest relatives and friends; no menials nor hirelings are employed; and if a neighbor yields assistance, it would be deemed an insult to offer compensation.

We have dwelt upon this beautiful rural custom, because, as it is one of the last, so is it one of the holiest offices of love. The grave is the ordeal of true affection. It is there that the divine passion of the soul manifests its superiority to the instinctive impulse of mere animal attachment. The latter must be continually refreshed and kept alive by the presence of its object; but the love that is seated in the soul can live on long remembrance. The mere inclinations of sense languish and decline with the charms which excited them, and turn with shuddering disgust from the dismal precincts of the tomb; but it is thence that truly spiritual affection rises, purified from every sensual desire, and returns like a holy flame to illumine and sanctify the heart of the survivor.

The sorrow for the dead is the only sorrow from which we refuse to be divorced. Every other wound we seek to heal—every other affliction to forget; but this wound we consider it a duty to keep open—this affliction we cherish and brood over in solitude. Where is the mother who would willingly forget the infant that perished like a blossom from her arms, though every recollection is a pang? Where is the child that would willingly forget the most tender of parents, though to remember be but to lament? Who, even in the hour of agony, would forget the friend over whom he mourns? Who, even when the tomb is closing upon the remains of her he most loved; when he feels his heart, as it were, crushed in the closing of its portal, would accept of consolation that must be bought by forgetfulness?—No, the love which survives the tomb is one of the noblest attributes of the soul. If it has its woes, it has likewise its delights; and when the overwhelming burst of grief is calmed into the gentle tear of recollection; when the sudden anguish, and the convulsive agony over the present ruins of all that we most loved, is softened away into pensive meditation on all that it was in the days of its loveliness—who would root out such a sorrow from the heart? Though it may sometimes throw a passing cloud over the bright hour of gayety, or spread a deeper sadness over the hour of gloom, yet who would exchange it, even for the song of pleasure, or the burst of revelry? No, there is a voice from the tomb, sweeter than song. There is a remembrance of the dead to which we turn, even from the charms of the living. Oh, the grave!—the grave!—It buries every error—covers every defect—extinguishes every resentment! From its peaceful

bosom spring none but fond regrets and tender recollections. Who can look down upon the grave, even of an enemy, and not feel a compunctious throb, that he should ever have warred with the poor handful of earth that lies mouldering before him!

But the grave of those we loved—what a place for meditation! There it is that we call up in long review the whole history of virtue and gentleness, and the thousand endearments lavished upon us almost unheeded in the daily intercourse of intimacy—there it is that we dwell upon the tenderness, the solemn, awful tenderness of the parting scene. The bed of death, with all its stifled griefs—its noiseless attendance—its mute, watchful assiduities. The last testimonies of expiring love! The feeble, fluttering, thrilling—oh! how thrilling—pressure of the hand! The last fond look of the glazing eye, turning upon us even from the threshold of existence! The faint, faltering accents, struggling in death to give one more assurance of affection!

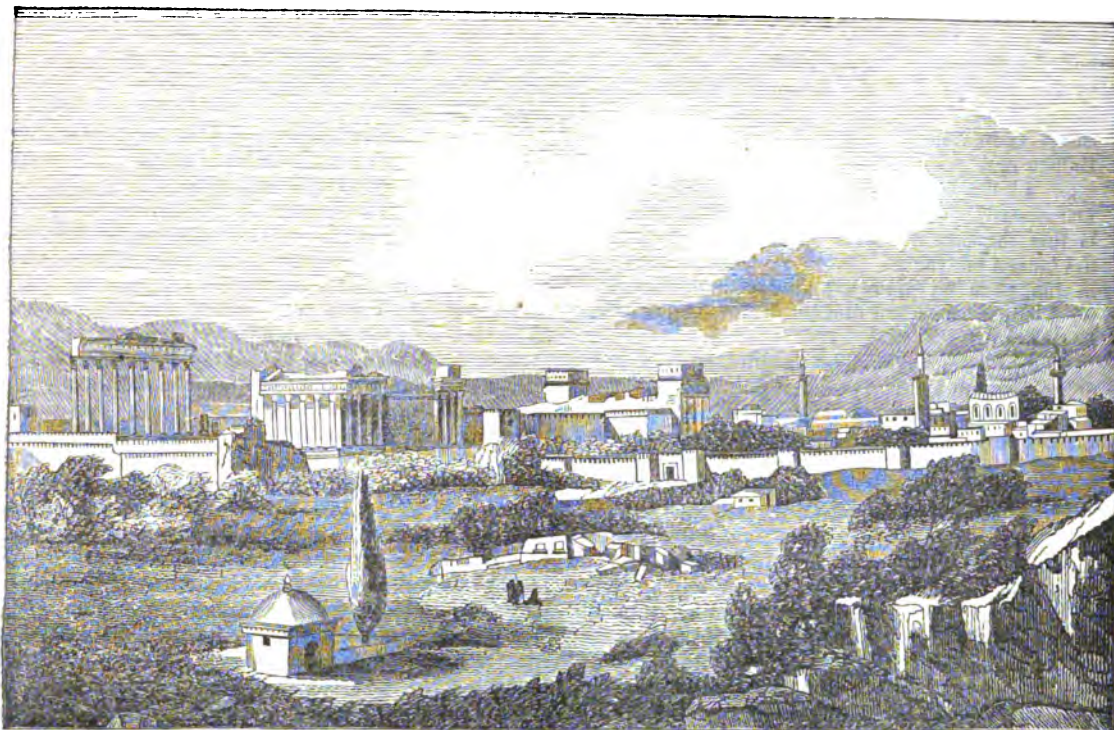
Ay, go to the grave of buried love, and meditate! There settle the account with thy conscience for every past benefit unrequited—every past endearment unregarded, of that departed being, who can never—never—never return to be soothed by thy contrition!

If thou art a child, and hast ever added a sorrow to the soul, or a furrow to the silvered brow of an affectionate parent—if thou art a husband, and hast ever caused the fond bosom that ventured its whole happiness in thy arms, to doubt one moment of thy kindness or thy truth—if thou art a friend, and hast ever wronged, in thought, or word, or deed, the spirit that generously confided in thee—if thou art a lover, and hast ever given one unmerited pang to that true heart which now lies cold and still beneath thy feet;—then be sure that every unkind look, every ungracious word, every ungente action, will come thronging back upon thy memory, and knocking dolefully at thy soul—then be sure that thou wilt lie down sorrowing and repentant on the grave, and utter the unheard groan, and pour the unavailing tear; more deep, more bitter, because unheard and unavailing.

Then weave thy chaplet of flowers, and strew the beauties of nature about the grave; console thy broken spirit, if thou canst, with these tender, yet futile, tributes of regret; but take warning by the bitterness of this thy contrite affliction over the dead, and henceforth be more faithful and affectionate in the discharge of thy duties to the living.—WASHINGTON IRVING.

WRITE WRITTEN RIGHT.—[A Twistification.]

WRITE we know is written right,
When we see it written write;
But when we see it written right,
We know it is not written wright:
For write, to have it written right,
Must not be written right or wright.
Nor yet should it be written rite;
But write, for so 'tis written right.



Ruins of the City of Balbec.

BALBEC.

NEXT in renown to Palmyra, among the ruined cities of the ancient world, is Balbec, situated in the same region, the extraordinary fate of which has been, to be first the seat of luxury, and magnificence almost unparalleled, and then, as if the curse of Heaven had fallen on it, to be reduced to a little better than a desolate wilderness. It is man, however, and not nature, that has wrought the change; no blight has made the soil or poisoned the air, but a degrading despotism has as effectually dried up the sources of social prosperity as if some elementary convulsion had suddenly turned the clime of beauty cold and dark, and struck the teeming earth with hopeless barrenness. Indeed, Turkish oppression has done what no unkindness of nature could have effected. The splendors of Palmyra rose under the breath of a free commerce in the midst of a sandy desert; but nothing has been able to preserve that and many other great cities from crumbling into heaps of ruins at the death-touch of the gloomy tyranny that now hangs like a pall over the land.

We are indebted for the most complete account of Balbec, as for that of Palmyra, to Mr. Wood and his friends, who after visiting the two cities, gave to the public, in successive volumes, most accurate and splendid delineations of everything they had seen in each, accompanied with historic notices and short descriptions. It was on their return from Palmyra that they proceeded to Balbec, which lies almost on a line drawn from the former city due west to the sea. It is, however, a little to the north of Palmyra. The

spot in which it is placed is in one of the valleys of Mount Libanus, (the Lebanon of Scripture,) now called the Plain of Bocat, a fertile and well-watered opening to the sea, which forms its south-western extremity, while Balbec stands immediately under the high ground which closes it in the opposite direction. Its breadth, from Mount Libanus to Mount Anti-Libanus, varies from four to two leagues.

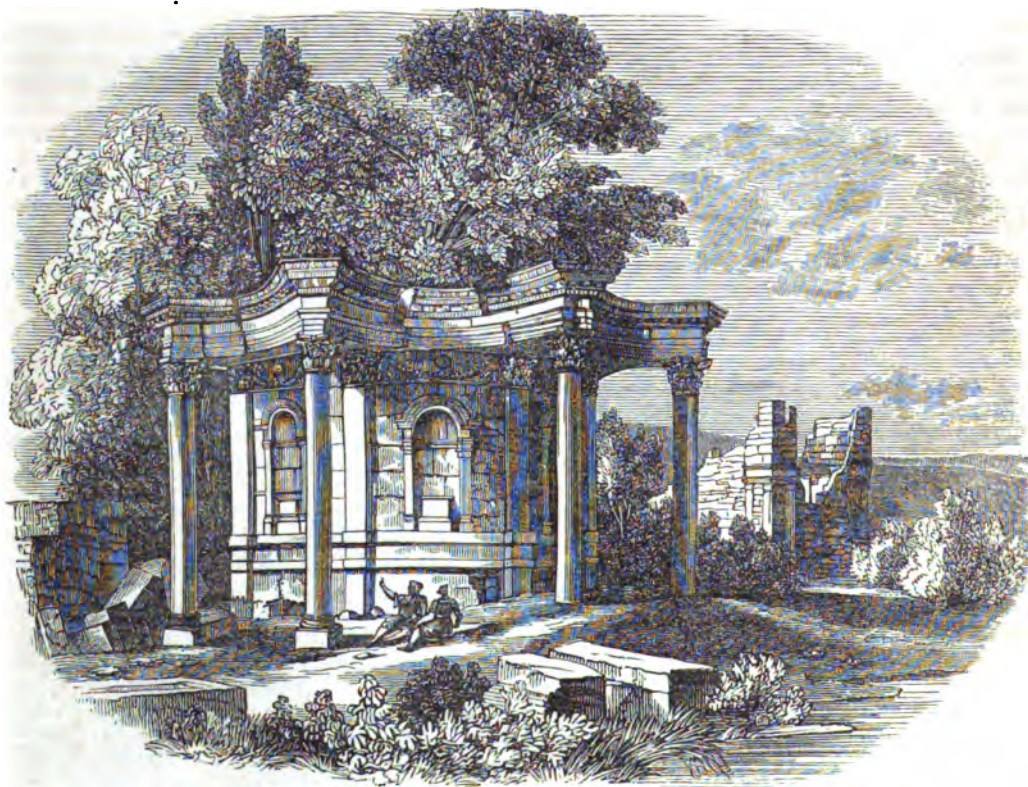
Balbec is situated, as nearly as possible, half way between Damascus to the south-east and the port of Tripoli, in Syria, to the north-west. When Wood was there in 1751, the place contained about 5000 inhabitants, among whom were a few Jews and Christians; but later accounts describe its population as greatly reduced. The collection of miserable huts which form the modern town, probably do not now harbor more than a thousand half-savage Arabs. Ancient writers, in general, are as silent respecting Balbec as respecting Palmyra. But it is no doubt the same city which Macrobius, in his Saturnalia, mentions under the name of Heliopolis of Coelesyria, and to which he tells us the worship of the sun was brought, in very remote times, from the other city of the same name in Egypt. Heliopolis in Greek means the city of the Sun; and the signification of the Syriac term Balbec is the Vale of Bal, the oriental name for the same luminary when worshipped as a god. It is probable that Balbec was the ancient, as it is the modern, name of the place, although, from not having been mentioned, like Tadmor, the old name of Palmyra, in the Hebrew Scriptures, it has come down to us only in the form of the Greek translation, Heliopolis.

The universal tradition of the country, Wood informs us, is that Balbec, as well as Palmyra, was built by Solomon. Many stories, it seems, are told by the inhabitants of the manner in which the celebrated Jewish king spent his time in this retreat. Some critics have supposed that some building at Balbec may possibly be that spoken of in his writings as "the Tower of Lebanon that looketh toward Damascus." One of the stories current on the spot is that the city was built by him as a residence for the Queen of Sheba. It is believed, of course, that in this, as in all his other similar undertakings, the wise monarch availed himself of the agency of genii or spirits.

The ruins of the ancient magnificence of Balbec do not present a crowd of fallen edifices, spread over a large extent of space, like those of Palmyra: they consist only of three distinct buildings, which stand not far from each other, in a plain at a short distance from the inhabited part of the town. The cut which we have given, copied from a much larger engraving in Mr. Wood's volume, presents a view of these buildings, with some others in the modern town, as seen from the south. To the left of the picture, or on the west, is the immense structure commonly called the Temple of the Sun, with its courts. More in the foreground is another smaller, but more entire temple; and at a considerable distance west from that, and still farther to the south, is a third temple, of a circular form, distinguishable by a modern spire, which has been erected over it, to convert it into a

Greek church. A Doric column, a Turkish mosque, and some other modern erections, are seen interspersed. Surrounding the whole is the city wall, ten or twelve feet high, and defended at intervals by square towers.

The entry to the great Temple of the Sun is from the east, through a noble portico of twelve circular columns: and the first apartment in which the visitor finds himself is a magnificent hexagonal (six-sided) hall, 180 feet in diameter, exhibiting on all sides the remains of an architectural beauty and magnificence of the richest character, in the columns and other ornaments of a circle of chambers which run around it. Beyond this is a still larger court of nearly a square form, being 374 feet in one direction by 368 in another, and at the farther extremity of that is the far-stretching pillared structure forming the proper temple. As may be observed from the view, nine of the lofty columns which had composed this part of the edifice are still to be seen standing together. There had been originally fifty-six in all, ten at each end, and eighteen others along each of the sides. The entire length of the space which they include is 285 feet, and its breadth 157. The height, including the plinth, is 87 feet. Nothing grander can be conceived than the aspect presented by this immense and richly ornamented temple, when seen in its full extent. No part of the structure is perhaps more wonderful than the terrace or soubassement by which the whole is surrounded, the stones composing which are in general 30 feet in length by 10 in breadth, and



Circular Temple of Balbec.

13 in height. At the west end are three of the enormous length of 63 or 64 feet each. A freestone quarry still remains open, not far from the city wall, from which these colossal blocks appear to have been hewn, and where many of similar dimensions are to be seen cut from the rock, and left ready to be removed. From this and other circumstances, Mr. Wood concludes that the soubassement of the temple was never finished. One of the stones lying in the quarry, which is not quite detached, is even larger than any of those in the temple, measuring 70 feet in length by 14 in breadth, and $14\frac{1}{2}$ in height. Its weight would be about 1135 tons.

The other temple, to the south of this, is, as we have mentioned, of smaller dimensions, but is still a large building, being 222 feet in length by $114\frac{1}{2}$ in breadth. Its columns have been originally 34 in all, namely, 8 in front, and 13 along each of the sides. Their height, including the plinth, is $76\frac{1}{2}$ feet; but the ground on which this temple stands is lower than the site of the other. The ornaments here are all likewise of the richest description. The Turks have built two great square towers on the ruins of the portico of this temple, but in other respects it is considerably less dilapidated than the former. In Wood's time, nearly all the pillars composing the peristyle, together with their entablature, were entire.

Our second engraving is a view of the circular temple, a small building of exquisite beauty. The building itself, exclusive of the pillars by which it is surrounded, is only 32 feet in diameter; and the height is divided into two parts, in the lower of which the architecture is Ionic, and in the higher, Corinthian. The lower has been at one time converted into a Greek church. The grace and lightness of the exterior of this edifice make it a perfect gem of art.

The buildings of Balbec are for the most part of the Corinthian order. John of Antioch states that the great temple was built by the Roman emperor, Antoninus Pius, in the second century; and other circumstances would also lead to the conclusion that it is of this age.

AN INVITATION TO THE STUDY OF BOTANY.

AMONG all the studies which occupy the mind of man, few are attended with circumstances equally pleasing in their pursuit, few can boast that infinite variety of objects which are perpetually engaging our attention, and inviting us to pleasures equally rational and innocent, as Botany. It is a science which has been cultivated by the wisest of mankind, and particularly by the professors of the medical art. Nor is it by any means limited to particular professions. Every one, in fact, ought to be so well founded in the principles of botanical knowledge, as to be acquainted with the name and history of plants,—to be capable of finding their names in the system,—and to describe whether they be used in diet or in medicine.

"In this enlightened age," says an eminent botanist, "when arts and sciences are carried to a pitch unthought of in former times, we might expect a nation celebrated not less for its arts than its arms, would be the first to promote a science, whose improvements are the only solid check to the baneful and enervating effects of luxury and dissipation; and accordingly we find many of our nobility, gentlemen of landed property, and public societies, fully aware of its importance, and endeavoring, by premiums, and a variety of other means, to improve it."

Much, however, still remains to be done; nor is it probable that their endeavors will be crowned with success, till botany is more generally cultivated, and plants, particularly the grasses, better understood. Hence the difficulty which many of our modern writers on agriculture have to encounter, in communicating their discoveries, for want of botanic information; by so much the more is the progress of this most useful science retarded, as must be obvious to all who have perused their writings with any degree of attention.

Independent also of exalting our conceptions of the Supreme Being, and of leading us directly to the knowledge of causes and effects, so well exemplified in the vegetable world, the advantages resulting from a knowledge of botany are self-evident; for, whoever has turned his mind so as to comprehend the extensive system of the vegetable kingdom, in the manner as at present taught, and has traced this system through its various connexions and relations, either descending from generals to particulars, or ascending by a gradual progress from individuals to classes, till it embraces the whole vegetable world, will, by the mere exercise of the faculties employed for this purpose, acquire a habit of arrangement, a perception of order, of distinction, and subordination, which it is not perhaps in the nature of any other study so effectually to bestow.

In this view, the examination of the vegetable kingdom seems peculiarly proper for youth, to whose minds the study of natural objects is always an interesting occupation, and who will not only find in this employment an innocent and a healthful amusement, but will familiarize themselves to that regulated train of ideas, that perception of relation between parts and the whole, which is of use, not only in the pursuit of this delightful study, but in all the concerns of life.

Independent, too, of the habits of order and arrangement which will be thus established, it may justly be observed, that the bodily senses are highly improved by that accuracy and observation, which are necessary to discriminate the various objects that pass in review before them. This improvement may be carried to a degree of which those who are inattentive to it have no idea. The sight of Linnaeus was so penetrating, that he is said never to have used a glass, even in his minutest inquiries; and there is a striking instance of an individual, who, although wholly deprived of sight, has improved his other senses, his touch, his smell, and his taste, to such a degree, as to distinguish all the native plants of this country, with an accuracy not attained by many of

those who have the advantages of sight, and which justly entitles him to rank among the first botanists of the kingdom.

Independent of the propriety of the creature admiring the works of his beneficent Creator, and of the advantages resulting to the individual who attaches himself to this study, "as enlarging the understanding, and rendering his mind more orderly in every concern of life, and his senses more acute," he will find also that there results from the pursuit of botany, the most heartfelt satisfaction. In this occupation it is that the violent passions are lulled into a dead calm, and only so much of emotion is produced as is sufficient to render life happy and agreeable.

Plants even present themselves for our regards; they charm us by the beauty of their forms, the richness of their shades, and the pleasure they spread around our habitations; they alone afford delight, without leaving behind any inquietude. The heart overwhelmed with grief, the sight fatigued by exertion, find in the verdure of fields, adorned with flowers, both comfort and refreshment. For us the rose kindly unfolds to our view her smiling colors; the pink at the same time flatters our sight and our smell by its agreeable emanations; and a thousand other flowers, of different forms, every moment present themselves to our notice. Fruit-trees, after gratifying our sight, deposite into our hands the most delicious food; the waving corn and golden sheaves delight every heart, and we meet, too, with other kindly vegetables, which can assuage our pain and cure our maladies. In vegetables we discover the foundation of the linen which we wear, of the paper which hands down to us the wisdom of ages, and those dyes which impress on our garments their brilliant colors. To plants we are indebted for the wood which warms us in winter, kindling into a blaze, resembling the sun we seem not now to want. Without timber our houses could scarcely have been constructed; and when timber is fashioned into ships, the world, which, with its produce, was before separated from us by a vast expanse of water, is now approached even to our very chambers. "Hence," as Senebier observes, "I behold with still greater veneration those trees, whose stout branches diverge on every side, yet possessing a foliage which agreeably quivers to every breeze, but whose massy trunks show an existence throughout ages. Under their vast shadows, listening to the songs of the inhabitants of the groves, I repose myself; leaving this retreat, I next tread over a rich carpet of innumerable flowers, whose varied enamel yet fixes the tender regards of that old man, who has so much and so often admired it in his youth."

The beauties of nature, even those which feast the intellectual eye, are inexhaustible. So vast a profusion of beauty, contrivance, and design, as is seen exhibited by nature, multiplies greatly the inlets to knowledge and to happiness. The inimitable Hervey, after having meditated among the tombs, and descanted upon the starry heavens, then treats the world with his "reflections upon a flower-garden :—"

"Here," says he, "nature, always pleasing, every-

where lovely, appears with particular attractions Yonder, she seems dressed in her deshabelle; grand, but irregular; here she calls in her handmaid art, and shines in all the delicate ornaments which the nicest cultivation is able to convey. 'Those are her common apartments where she lodges her ordinary guests; this is her cabinet of curiosities, where she entertains her intimate acquaintance. My eye shall often expatiate over those scenes of universal fertility; my feet shall sometimes brush through the thicket, or traverse the lawn, or stroll along the forest-glade; but to this delightful retreat shall be my chief resort. Thither will I make excursions, but here will I dwell.

"What sweets are these, which so agreeably salute my nostrils? They are the breath of the flowers; the incense of the garden. How liberally does the jessamine dispense her odoriferous riches! How deliciously has the woodbine embalmed this morning walk! The air is all perfume. And is not this another most engaging argument to forsake the bed of sloth? Who would lie dissolved in senseless slumber, while so many breathing sweets invite him to a feast of fragrantcy; especially considering that the advancing day will exhale the volatile dainties? A fugitive treat they are, prepared only for the wakeful and industrious. Whereas, when the sluggard lifts his heavy eyes, the flowers will droop; their fine scents will be dissipated; and, instead of this refreshing humidity, the air will become a kind of liquid fire."

Awake, the morning shines, and the fresh field
Calls you: ye lose the prime, to mark how spring
The tended plants, how blows the citron-grove;
What drops the myrrh, and what the balmy reed;
How nature paints her color; how the bee
Sits on the bloom, extracting liquid sweets. MILTON.

"How delightful is this fragrance! It is distributed in the nicest proportion; neither so strong as to oppress the organs, nor so faint as to elude them." What an enchanting situation is this! One can scarcely be melancholy within the atmosphere of flowers. Such lively hues, and delicious odors, not only address themselves agreeably to the senses, but with a surprising delicacy, the sweetest emotion of the mind.

As regards the appearance of plants, the inspection of the botanist subtracts nothing from the delight which the flowers impart; on the contrary, his wonder, his admiration, its fragrance, is increased by the minute examination of these fair and exquisite productions of nature. For the more closely nature is scrutinized the more she gains by a new acquaintance, and the more reason she affords for the admiration of her inimitable perfections. Hill and dale, broad expanse of water, luxuriant verdure; the variety of seasons, with their successive productions, forming, as it were, a diversified drama, a continually shifting scene, which never cloy, but always delights, must at first have captivated the attention of man, even the most barbarous or least instructed. For the botanist there is no solitude; wherever he wanders he finds food for his genius in the abundant resources of nature. He is always surrounded with

agreeable and inviting companions which ever keep his interest alive. The book of nature is ever open to him in his botanical excursions; he acquires knowledge, health, and strength; he feels an inward solace which no other pursuit can afford him; his enjoyments are pure and intellectual; his mind calm and serene; above all, the fittest moments to contemplate the power and wisdom of his Maker, and to admire his providence.

Plants appear to have been profusely scattered over the earth, as the stars in the firmament, to invite man, by the attractions of curiosity and pleasure, to their contemplation. But the stars of heaven are placed at a distance from us; to possess this information requires a previous knowledge and acquaintance with the mathematics—instruments, machines, a long artificial ladder, to bring them within our scope. Plants, on the contrary, grow under our feet, and seem to invite our hands; and the instruments required for their examination are comparatively trifling—a needle and a magnifying glass, or at most, a pocket microscope, is all the apparatus that is needful. The botanist, at every walk, pleasantly glides from object to object—each flower he reviews excites in him curiosity and interest; and as soon as he comprehends the manner of its structure, and the rank it holds in a system, he enjoys an unalloyed pleasure, not less vivid, because it costs him no expense or trouble. Before, however, the sentimental enjoyments of botanical pursuits can be fully appreciated, some knowledge of this delightful study must be acquired.

THE PHILOSOPHY OF LIFE,

BY ROBERT MORRIS, ESQ.

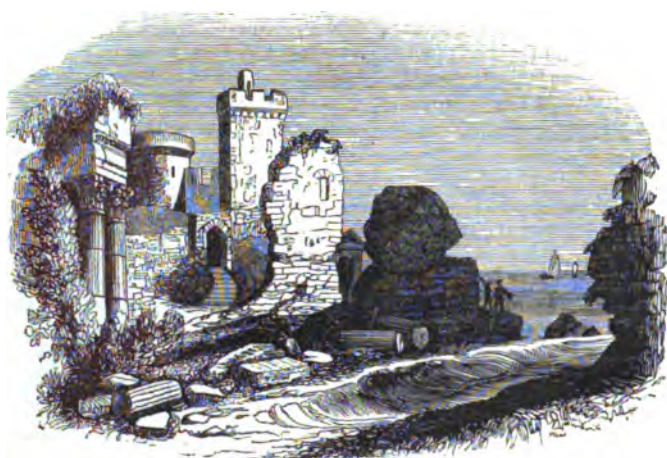
"TIME, faith, and energy." Perhaps there never was a period in our history, when greater necessity existed for the exercise of the recuperative energies of the people and of the country, than at the present moment. Thousands have been injured by the vicissitudes of trade and the change of fortune. The rich have become poor, and the independent have lost their means of support. Many under such circumstances are disposed to despond. They fear that their chances have gone by, that the tide in their affairs has been at its flood and is subsiding, that the future has little hope or no encouragement for them. Not so, however, in a country like ours, if they possess health and energy, and are on the sunny side of fifty. Ingenuity, industry, and perseverance, "time, faith, and energy," will accomplish much. Some of the most eminent men that ever lived were comparatively obscure in early life. Adversity not only tested their energies, but it roused and excited their minds. They saw the necessity of an extraordinary struggle; and nerving themselves to the trial and temptations of life, they rushed on boldly, and in most cases with success. The truth is, that experience, although a severe, is a most excellent task-master. No one knows better how to

enjoy wealth than the individual who has acquired it through the sweat of the brow. Few understand the real mutations and the true philosophy of life, who have not seen the air-blown bubbles of youth and hope fade away as they attempt to clasp them, who have not realized much of the disappointment and vexation to which human flesh is heir. It is only by trial that we feel the spirit of manhood within us, and with a moral courage, worthy a lofty and intellectual nature, determine not to be intimidated by a single blow of misfortune, or be disheartened because clouds and darkness occasionally obscure the prospect. This at least is the true policy. The Deity has given us many noble attributes. We live in a world which presents many means of sustenance. Our country is rich in soil, fertility, in health, and in enterprise. Millions yet unborn may grow up and prosper upon her bosom, while new sources of industry, of wealth, and of prosperity, are developed with every year of our national existence. Again, then, we say to those who have suffered, or are suffering from the mutations of fortune, be not cast down, do not despair. Gather a lesson from some of the frail but green and glorious vines, which, born in darkness and obscurity, spring forward and court the sunshine and the light, as essential to their existence. The gloom of to-day may serve but to prelude the glory of to-morrow. The thick cloud which hovers above, and darkens our path, may soon pass away and give place to blue skies and golden sunshine. "Nature," observes an eloquent writer, "scatters the seeds of genius to the winds, and though some may be choked by the thorns and brambles of early adversity, yet others will now and then strike root, even in the clefts of the rock, struggle bravely up into sunshine, and spread over their birthplace all the beauties of vegetation." So with the ways of fortune. It is a cherished theory of ours, that sooner or later, even in this life, the beings who cling to truth, virtue, and integrity, who have hope in heaven, who make proper use of the faculties and energies with which they are blessed by Providence, will ultimately succeed, and may, in the true spirit of philosophy, smile upon the storms and tempests, in which, for a time, they may be surrounded. "Time, faith, and energy," are especially essential after such a convulsion as has been experienced in the monetary and commercial world of this Union. The worst, we feel satisfied, has gone by. The FUTURE should not be disregarded, for in that future, with the proper faculties, animated by the proper motives, and pursuing steadily and vigilantly laudable objects, contentment, peace, and prosperity will assuredly be found.

FRAGMENT.

A beauteous flower of early Spring
Breathed sweetly on its parent stem,
I saw it in its blossoming:
I passed again that fairy gem;
Ere one short day
Had it died away!
Earth's joys resemble that sweet flower,
For, phantom-like, in one brief hour
Gone is for aye the witching power!

F. S.



Ruins of Caesarea, in Palestine.

THE SEACOAST OF PALESTINE.

THE seacoast of Palestine is not naturally adapted for a maritime people : there is not a good harbor to be found on it. The best is that of Acre, of which, though it is called "the maritime key of Palestine," Dr. Clarke says : "The port is indeed bad, but it is better than any other along the coast." Joppa (now Jaffa or Yaffa), which was the only port the Jews possessed while they existed as an independent nation, at least the only place entitled to the name of a national port, is one of the worst on the Mediterranean, and only rose into importance on account of its vicinity to Jerusalem, from which it lies about forty miles west. Even the slip of coast which was possessed by that wonderful people, the Phœnicians, is not at all adapted to the wants of modern navigation. Speaking of the country while it formed a portion of the Roman empire, Gibbon, in his summary way, says : "Phœnicia and Palestine were sometimes annexed to, and sometimes separated from, the jurisdiction of Syria. The former of these was a narrow and rocky coast ; the latter was a territory scarcely superior to Wales, either in fertility* or extent. Yet Phœnicia and Palestine will for ever live in the memory of mankind ; since America, as well as Europe, has received letters from the one and religion from the other." In a note he adds : "The progress of religion is well known. The use of letters was introduced among the savages of Europe about fifteen hundred years before Christ ; and the Europeans carried them to America about fifteen centuries after the Christian era. But in a period of three thousand years the Phœnician alphabet received considerable alterations as it passed through the hands of the Greeks and Romans."

By looking along the outline of the coast, as de-

* It is not quite correct to compare Palestine and Wales as to fertility. The reader familiar with the Biblical history of the Jews will recollect the great numbers maintained from the produce of the soil of Judea in the flourishing times of the monarchy. Even now it is a fine country, and might be rendered very fertile.

lineated in a map, the reader will remark the more important names which give interest to a shore naturally rugged and dangerous. Gaza and Ascalon, the "two brides," will remind him of the Philistines, who gave the name of Palestine to the country, and of their great antagonist, Samson, who carried off the gates of the one, and provided himself with raiment from the inhabitants of the other. It was prophesied that "Gaza shall be forsaken, and Ashkelon a desolation." The present Gaza is a modern town that arose on the ruins of the old. Alexander the Great was twice wounded during his siege of Gaza, and the town also suffered from a furious insurrection of the Jews ; and this latter circumstance is considered to be an explanation of Luke's words, when, in recording the directions which Philip received, he says that he was ordered to go "towards the south unto the way that goeth down from Jerusalem unto Gaza, which is desert." As for Ascalon, the birthplace of Herod the Great, it is "a desolation." Further on is Joppa, now Jaffa, beyond it Cæsarea, which arose, as it were, in a day, at the will of Herod, then the famous Acre, with the noble promontory of Carmel ; and beyond these again the territory of the once powerful "merchant-princes," whose ships, in the far-past history of our world, floated on unknown seas, and carried the civilizing influence of commerce to the most distant "isles of the Gentiles." The whole line of coast is comparatively a ruin ; but the silence and desolation of that part of it which was once animated by the life and bustle of the people of Tyre and Sidon, render it perhaps as affecting a scene as the traveller can contemplate.

The laws, customs, and institutions of the Jews did not dispose them to become a maritime people ; and accordingly in the best days of their monarchy, when they aspired to the possession of a navy, their neighbors the Phœnicians were their instructors, guides, merchants, and carriers. After the fall of Tyre, and when Palestine became a portion of the Roman empire, there was more commercial activity in the Jewish ports, and their rulers gave it encour-

agement. Herod the Great, who, though he was a bad man and a tyrant, had yet a very enterprising and magnificent spirit, built the city of Cæsarea, of which Josephus gives the following account:—

“Upon his observation of a place near the sea, which was very proper for containing a city, and was before called Strato’s tower, he set about getting a plan for a city there, and erected many edifices with great diligence all over it, of white stone. He also adorned it with most sumptuous palaces and large edifices for containing the people; and, what was the greatest and most laborious work of all, he adorned it with a haven that was always free from the waves of the sea. Its largeness was not less than the Peiræus [at Athens], and had towards the city a double station for the ships. It was of excellent workmanship, which was the more remarkable, being built in a place that of itself was not suitable to such noble structures, but was perfected by materials from other places, at very great expense. The city is situate in Phœnicia [strictly, Cæsarea was in Judea, not on the slip of seacoast occupied by the people of Tyre and Sidon], in the passage by sea to Egypt, between Joppa and Dora, which are lesser maritime cities, and not fit for havens, on account of the impetuous south winds that beat upon them, which, rolling the sands that come from the sea against the shores, do not admit of ships lying in their station; hence the merchants are generally there forced to ride at their anchors in the sea itself. So Herod endeavored to rectify this inconvenience, and laid out such a compass towards the land, as might be sufficient for a haven, wherein the great ships might lie in safety. And this he effected by letting down vast stones of above fifty feet in length, not less than eighteen in breadth, and nine in depth, into twenty fathoms deep; and as some were less, so were others bigger than those dimensions. This mole, which he built by the seaside, was two hundred feet wide; the half of which was opposed to the current of the waves, so as to keep off those waves which were to break upon them; but the other half had upon it a wall, with several towers, the largest of which was named Drusus, and was a work of very great excellence, and had its name from Drusus, the son-in-law of Cæsar, who died young. There was also a great number of arches where the mariners dwelt. There was also before them a quay, which ran round the entire haven, and was a most agreeable walk to such as had a mind to that exercise. But the entrance or mouth of the port was made on the north quarter, on which side was the stillest of the winds of all in this place. And the basis of the whole circuit on the left hand, as you enter the port, supported a round turret, made very strong, to resist the greatest waves; while on the other hand, stood upright two vast stones joined together, and those each of them larger than the turret, which was over against them. Now there were edifices all along the circular haven, made of the most polished stone, with a certain elevation, whereon was erected a temple, that was seen a great way off by those that were sailing for that haven, and had in it two statues, the one of Rome, the other of Cæsar. The city itself was called Cæsarea [like

several other cities, in compliment to the emperor], and was also built of fine materials, and was of a fine structure. Nay, the very subterranean vaults and cellars had no less of architecture bestowed on them, than had the building above ground. Some of these vaults carried things at even distances to the haven and to the sea; but one of them ran obliquely, and bound all the rest together, that both the rain and the filth of the citizens were carried off with ease, and the sea itself, upon the flux of the tide from without, came into the city, and washed it all clean. Herod also built thereon a theatre of stone, and on the south quarter, behind the port, an amphitheatre also, capable of holding a vast number of men, and conveniently situated for a prospect to the sea. This city was thus finished in twelve years, at the expense of Herod.”

Cæsarea, thus magnificently built and adorned, became the virtual capital of Judea under the Romans. It was Herod’s royal residence, and the residence of the Roman governors. Herod founded games, to be celebrated every fifth year, in honor of Cæsar, and of the building of the place; and it was at one of the celebrations of these games, that his grandson, Herod Agrippa, died miserably, as recorded in the twelfth chapter of the Acts of the Apostles. It was the scene of Paul’s imprisonment, when he was rescued from the violence of the mob, and sent down from Jerusalem, out of the reach of the conspirators; and here he made his celebrated orations, the one in defence of himself, when he was accused of being “a pestilent fellow,” and the other before King Agrippa, in explanation of his character and conduct. From hence also he embarked on his perilous voyage, after he had made his “appeal unto Cæsar.”

Cæsarea subsisted with various fluctuations till after the Crusades. Dr. Clarke, who viewed Cæsarea from off the coast, says: “Perhaps there has not been in the history of the world an example of any city that in so short a space of time rose to such an extraordinary height of splendor as did this of Cæsarea, or that exhibits a more awful contrast to its former magnificence, by the present desolate appearance of its ruins. Its theatres, once resounding with the shouts of multitudes, echo no other sounds than the nightly cries of animals roaming for their prey. Of its gorgeous palaces and temples, enriched with the choicest works of art, and decorated with the most precious marbles, scarcely a trace can be discerned. Within the space of twelve years after laying the foundation, from an obscure fortress (called the tower of Strato, as it is said, from the Greek who founded it), it became the most celebrated and flourishing city of all Syria.”

Mr. Buckingham, in his “Travels in Palestine,” gives a minute description of the ruins of Cæsarea, and says that they fully justify the description given by Josephus of its magnificence. Travellers still more recent speak of the utter desolation of the place. Captain Skinner, looking down from the promontory of Carmel, says: “The first place towards Jaffa is the modern village of Atlieb, the Castel Pelegrino of the Crusades, and the Dor of the Hebrews. Beyond that—its columns and buttresses, a

confused mass, stretching into the waves, over which, from this distance even, the surf may be seen to break—is the celebrated city of Cæsarea.”

The Rev. Vere Monro, in his “Summer Ramble in Syria,” adds: “The imagination, dwelling upon the busy streets and stately colonnades, still inquires, Where is Cæsarea? It lies entombed beneath the little mounds that are barely marked upon the surface; so lowly, they could scarcely serve to hide the mouldering shreds of a peasant’s cot; and it should seem as if the very stones had rotted in the soil! . . . Near the wall on the east side of the port are some large subterranean arches, the remains of those sewers or depôts for grain with which Herod completed the underwork of the city. In the southern gateway are still perfect the marble sockets, and the frame or groove for the portcullis. The spot continues to bear the name of *Kaisaria*.” Captains Irby and Mangles mention that there is a small village here, partly constructed out of the ruins of Cæsarea.

THE ADVANTAGES OF LITERARY PURSUITS;

AND THEIR CONSISTENCY WITH COMMERCIAL AND OTHER INDUSTRY.

THOUGH no one, in the present enlightened age, denies, or even doubts, that literary pursuits are in themselves advantageous, there are many well-informed and truly philanthropic persons, who both entertain and express their opinion that the cultivation of literary taste is unfit for those who have to win their subsistence by their own exertions; as having a tendency to diminish, if not to destroy, that industry which is so vitally necessary to the support of individuals; and to the maintenance of the bonds by which society is held together. This notion is as incorrect as we believe it to be sincere; and we feel ourselves imperatively and especially called upon to controvert it, because, engaged as we are in endeavoring to place the elements, at least, of every branch of useful knowledge within the reach of the very humblest and least wealthy classes of our compatriots, to admit, even tacitly, the correctness of this notion, would be virtually, if not in terms, to condemn our own conduct and to admit our publication to be mischievous instead of useful.

The truth is, that those who argue against the general diffusion of knowledge, and the consequent diffusion of a general taste for literary pursuits, set out by assuming the truth of a fallacy; *i. e.*, they assume that a taste for study is inseparable from an *EXTREME indulgence* of that taste. Nothing can be more erroneous than this assumption; the absurdity of which, indeed, will become obvious the moment it is stated in terms. Why, the very end and aim of study is to improve the mind, whereas this assumption is based upon the monstrous supposition that, in proportion as man becomes familiar with science and accustomed to reasoning, he will become less able

to discern the course demanded by his own interests, and the conduct due to the rights, the claims, the necessities, and the permanence of the society of which he is a member. Much more wisely has it been observed by a writer whose own extensive acquaintance with science and literature, and whose own undeviating morality and untiring industry well qualified him to give an opinion upon the subject, that “The natural and inevitable tendency of a cultivation of polite learning is, to refine the understanding, to humanize the soul, to enlarge the field of useful knowledge, and to *facilitate the attainment of THE COMFORTS AND THE ACCOMMODATIONS OF LIFE*.” It needs no argument to show that it could not have this “natural and inevitable tendency to *facilitate* the attainment of the comforts and accommodations of life,” if it were calculated, as well-meaning but ill-judging persons affirm it to be, to diminish or to destroy the industry of the humbler classes, since it is mainly by their industry and labor that the “comforts and the accommodations of life” are produced.

It is very true that the necessary demands of his family and society consume too much of the time of a laborer, a tradesman, or a clerk, to leave him sufficient leisure, even were he endowed with the necessary natural genius, to become a Newton in philosophy, or a Hume in history. But is there no medium between their admirable knowledge, and utter ignorance of every thing not actually forced upon his senses, and contained within the narrow sphere in which he lives and labors? Because he cannot astonish and instruct the world with a counterpart of the Principia, must he of necessity deem that the moon is made of cheese, or the earth square, and flat as a trencher? Because he cannot write an eloquent though partial history of England, in four thick quartos, does it inevitably follow that he cannot, without injury to his family, his country, and himself, be taught that Queen Elizabeth was not the daughter of Alexander the Great, that the Morea is not in the West Indies, or that a singular nominative does not govern a verb in the plural? Or will it for a moment be denied, that ignorance as gross as this, if not exhibited in these precise points, even yet remains to be rooted out of the minds of a considerable portion of our population,—and that, too, by no means exclusively in the lowest classes,—and to be rendered mere matter of history and wonder to their posterity?

He who rightly profits by the knowledge acquired in his leisure hours, will have no inclination to injure his secular interests by neglecting his secular duties. The reader of the trumpery ballads, and the no less trumpery tales, which but a few years since formed the chief literary resources of the great mass of the people of *this* country, might, consistently and excusably enough, have neglected his duties for the indulgence of an aimless curiosity, and a ridiculous, if not mischievous, mental excitement. But the acquisition of the elements of knowledge is, surely, not a very probable means by which to render men regardless of the end of all knowledge—increased usefulness, and increased power to be useful.

And there is no one so limited in his circum-

stances, or so humble in his station and employment, as to be unable to render himself more serviceable in the class to which he belongs to society at large, and more contented and happy within himself, by devoting his leisure, and the surplus, however small, of his pecuniary means, to the culture of his intellectual powers, and to the enlargement of his intellectual resources.

How many valuable improvements may not society have lost from the general destitution of scientific knowledge which has hitherto prevailed among our operatives? It has been lamented, by the very intelligent gentleman from whom we have already quoted, "that so few dyers are acquainted with the principles of chemistry;" and it is no less to be regretted that the great mass of the laboring classes are equally far from being acquainted with those sciences which have the closest connexion with, and the most important influence upon, the arts which they severally practise as a means of obtaining their subsistence.

A judicious education of the people will teach them that economy of time, as well as of money, is the handmaid and nurse of all the virtues; and, far from rendering them less useful in their secular capacities, will infallibly render them more assiduous, and will very probably make them more capable in the fulfilment of them.

Moreover, setting aside all other advantages derivable from the diffusion of knowledge, general, as well as, in the strictness of the epithet, scientific, it must never be for a moment forgotten or concealed by any candid reasoner upon this most momentous subject, that all the time bestowed by the humbler classes upon the perusal of useful publications is gained from the health-destroying debauch of the fatal porter-house. Knowledge infallibly gives birth to improved moral feelings, and to a more extensive acquaintance with, and a more ready application of, moral principles; and every step taken towards rendering the people intelligent is a step towards redeeming them from vice, and rendering them permanently more virtuous, more useful, and more happy. Without knowledge they *may* be happy and virtuous; with it they *must* be so; and the certainty of good will assuredly not be denied to be preferable to the chance of it.

Post hoc, ergo propter hoc, is the fallacious but too common argument of superficial reasoners; and from that argument an infinity of mischief has arisen. It is very true that many men who could neither read nor write, have lived without incurring the censure of the laws, and died worth a plum. But they have done so, not *because* of their ignorance, but *in despite* of it. And who shall pretend to say how much more prosperous, and how much more *positively* virtuous, as well as happy, these very men might have been, if, to their natural good dispositions, and good capacities, they had superadded the blessings and the advantages of a sound, practical, and useful education?

He is truly rich, who desires nothing; and he is truly poor, who covets all.—*Solon*.

EMINENT SHOEMAKERS.

The following brief catalogue of men of this class who applied themselves to the *last* in improving the *understandings* of their fellow-men with a zeal worthy of *and* praise, may not prove uninteresting to our readers. For

"The shoemaker who hammers and *whistles* and sweats,
And works early and late to pay off his debts,"

should remember that he too may live in the memory of posterity with others of his craft, whose characters and attainments are worthy of emulation.

Linnaeus, the founder of the science of botany, was apprenticed to a shoemaker in Sweden, but afterwards taken notice of, in consequence of his ability, and sent to college.

David Pareus, the elder, who was afterwards a celebrated professor of theology at Heidelberg, Germany, was at one time apprenticed to a shoemaker.

Joseph Pendrell, who died some time since at Grey's buildings, London, and who was a profound and scientific scholar, leaving an excellent library, pursued through life the trade of a shoemaker.

Hans Sach, one of the most famous of the early poets, was the son of a tailor, served an apprenticeship to a shoemaker, and afterwards became a weaver, in which he continued.

Benedict Baddouin, one of the most learned men of the 16th century, was a shoemaker, as likewise was his father. This man wrote a treatise on the shoemaking of the ancients, which he traced up to the time of Adam himself. Thus Adam was a shoemaker and Eve a tailor! "She sewed fig-leaves together," proving truly the antiquity of these two branches of industry and skill.

To these may be added those ornaments of literature, *Holcroft*, the author of the *Critic* and other works; *Gifford*, the founder, and for so many years the editor, of the *London Quarterly Review*, one of the most profound scholars and elegant writers of the age; and *Bloomfield*, the author of the *Farmer's Boy*, and other works; all of whom were shoemakers, and the pride and admiration of the literary world.

John Brand, secretary of the London antiquarian society, and author of several learned works, was originally a shoemaker, but fortunately found means to complete his studies at Oxford.

Winckelman, the learned German antiquary, was the son of a shoemaker, and was for some time engaged in the same employment, but finally he burst from his obscurity and became a professor of belles lettres. He was the friend and correspondent of the most learned men of his time.

Fox, the founder of the sect called Quakers, was the son of a weaver, and apprenticed to a shoemaker and glazier.

Roger Sherman, the American statesman, was apprenticed to a shoemaker, and found time during his minority to acquire a stock of knowledge that assisted him in the acquisition of fame and fortune.

Mackey was also a shoemaker, justly celebrated for his elaborate work, "The Mysteries of Urania," a work displaying the most intense research and profound learning.



Malta.

MALTA.

GIBRALTAR has not inaptly been termed the key of the Mediterranean, and following up the simile, Malta may be compared to the spring of the lock, possessing advantages from its strength and situation, which cannot be too highly appreciated by England. There is, however, this difference in the two places, that while the former has had Nature for the chief engineer, the latter is indebted almost entirely to art for its almost equal impregnability. A detailed account of its extensive lines of fortification would exceed our present intention, which is to confine ourselves to those points more immediately connected with the Grand Port of Valetta, of which the above is a sketch.

The approach to Valetta, situated near the eastern point of the island, is highly picturesque and interesting; the fortifications, close to which vessels must pass, seem sufficient to annihilate the most powerful naval force that could be sent against it. There are two harbors separated from each other by a narrow neck of land; but the northern and smaller of the two is solely appropriated to the purposes of quarantine, a penance which is strictly enforced, as the inhabitants have already had an awful lesson, in the dreadful plague with which they were visited in 1813.

The southern, or Grand Port, is large, safe, and commodious, running up, in a south-west direction, a mile and three-quarters; the breadth at the en-

trance being less than 500 yards. It possesses great advantages as a harbor, being free from danger, and the shore everywhere so bold, that a line-of-battle ship may lie close to it, and take in a supply of water from pipes laid down in several places, or her provisions, without the aid of boats. The northern shore is but slightly varied from the straight line, but to the southward the coast is deeply indented by three inlets: the first, immediately on passing the point of entrance, called Bighi Bay, where the French had commenced a palace for Napoleon, which, after remaining thirty years in an unfinished state, has at last been converted into a naval hospital; secondly, a narrow creek, called Porto della Galera, or Galley Port, where the galleys of the knights were laid up; and, lastly, Porto della Sanglea. The two last are perfectly land-locked.

On the Valetta side the shore is one continued line of wharves, on which stand the Pratique-office, the Custom-house, the Fish-market, with ranges of storehouses both public and private; and along these wharves merchant vessels generally lie to discharge and load their cargoes. The Galley Port is principally appropriated to the establishments connected with the naval arsenal, whose storehouses and residences of the officers occupy the greater part of its shores. The dockyard is at the head of the creek, the victualling-office and cooperage along its eastern shore; and although its greatest breadth does not exceed 250 yards, the depth of water is sufficient to admit of two-decked ships lying at the

dockyard to undergo their necessary repairs; the western side is resorted to by merchant vessels when making a long stay. The shores of Port Sanglea are chiefly occupied by private yards for building and repairing merchant vessels; beyond which, up to the head of the harbor, the country is open.

The entrance to the harbor is defended by Forts Ricasoli on the east, and St. Elmo on the west, whose walls rise almost immediately from the sea-shore, and by Fort St. Angelo, a quadruple battery, the lowest tier of which is nearly level with the water. This fort stands at the extremity of the tongue which separates the Galley Port from Bighi Bay, and completely flanks the entrance. The next point, separating the Galley Port from Port Sanglea, is also protected by a battery, besides which a line of fortification surrounds the town on both sides the harbor, with bastions, where most conducive to the general defence, and towards the land the utmost ingenuity of art has been lavished to render the town impregnable.

The Maltese are an industrious and active, though by no means a fine race of men; the poverty of their living superinduces diseases, among which ophthalmic complaints are the most prevailing. The streets of Valetta are thronged with a squalid set of the most persecuting beggars, whose supplications for "carita" are as incessant, and more annoying to the ear, even than the ringing of the bells.

The boats, which are very numerous, afford a striking and pleasing feature in the general appearance of the place: though seemingly very clumsy, they are rowed with great velocity by the natives, who stand up and push at the oar; they are safe and commodious, always kept remarkably clean, and painted with the gayest colors, having an eye on each side of the stern; they are also provided with a white cotton awning, and curtains for fine weather, and a more substantial covering for rain; they are well regulated, and their hire is very moderate. The boat-races, which are frequent, offer a very lively and animated scene. The water is beautifully clear, and generally crowded with boys bathing, many of whom spend nearly as much time in that element as on shore; the Maltese are universally good swimmers and divers; and the numerous fast-days of the Catholic church give employment to many in supplying the market with fish.

Malta is very subject to the oppressive and enervating "sirocco," or south-east wind; but the "gale," or north-east wind, is that which blows with the greatest fury, and, blowing directly into the harbor, causes a sea across the entrance that would be dangerous to small vessels, and cuts off the communication across from Valetta to Vittorioso. The surf there beats against the walls of the fortifications with impetuous violence; it has even at times removed the guns from the embrasures of Fort Ricasoli,—and the spray has been carried over the top of the palace.

The island produces some excellent fruits, among which are the oranges and melons for which it is particularly celebrated, but the market is chiefly supplied from Sicily, a number of large boats, called

"speroneras," being constantly employed running to and fro. Provisions are cheap and abundant, but butchers' meat is indifferent. There is a lighthouse in Fort St. Elmo, occupying a very advantageous situation.

Valetta itself is built on the narrow neck of land which divides the two ports, occupying an area of 560 acres. The first stone was laid in 1566 by the famous Grand Master, John de la Valette, after having, the year before, obliged the Turks to abandon a protracted and vigorous siege against the Order, who then inhabited the opposite shores of the island called Burmola and Isola. The new city, however, soon surpassed the other parts in population, buildings, and commercial importance, and now gives name to the whole, which properly consists of five distinct quarters, or towns, viz., on the north side of the port, Valetta and Floriana, and on the south side, Vittoriosa, Burmola, and Isola; the three latter enclosed in an extensive line of fortification called the Cotonera.

The streets are at right angles to each other; and being built on an elevation inclining on either side, most of the transverse streets are necessarily constructed with flights of steps, which Lord Byron has justly anathematized as "cursed streets of stairs," an expression that might be drawn from the most pious while toiling up them on a sultry summer's day. The houses are low, never exceeding a second story; built of the stone of the island, and are provided with balconies to most of the windows, and flat terraced roofs, which, in commanding situations, furnish an agreeable resort in the cool of the day,—also to catch the rain, which is conducted by pipes to a cistern, with which every house is provided. There are likewise public fountains, the source of whose supply is in the southern part of the island, and conveyed to the city by means of an aqueduct. The streets are generally wide and well paved, with a broad footpath on each side; but the glare caused by the reflection of the sun on the sandstone is so intolerably distressing to the eyes as to render walking out during the middle of the day almost impossible.

The Palace, at present occupied by the governor, was formerly the residence of the Grand Master of the Order; it is a large and handsome quadrangular building, with a spacious courtyard in the centre; it stands about the middle and highest part of the town, and on it is the signal station. It contains some beautiful specimens of tapestry, and paintings of the Grand Masters, and has a very extensive armory attached to it, with curious specimens of armor and weapons. Before this palace is an open space called Piazza St. Giorgio, used as a military parade, and enlivened in the evenings by one of the regimental bands. Near this is the cathedral of St. John, the tutelary saint of the Order, a vast, though externally a remarkably plain and unostentatious edifice: within is a spacious oblong area, and on each side are aisles, with particular altars or chapels for the different nations composing the Order, adorned with paintings and sculpture according to the zeal or riches of the "Tongue," as it was technically called, to

which it belonged. The whole pavement is, however, richly emblazoned with the armorial bearings of the knights, in mosaic. The appointments of this cathedral suffered greatly during the temporary possession of the island by the French; a handsome silver railing round one of the altars escaped their sacrilegious rapacity only by being painted. The vaults below the cathedral are also curious. Besides St. John, Valetta abounds in churches, the incessant ringing of whose bells is among the greatest nuisances of the place. Although the island has been in possession of the English since 1800, no Protestant church has been built; a small chapel in the Palace, and one at the Dockyard, being the only places of worship of the Established Church. The next objects are the hotels, or inns of the different nations, where they held their meetings: these still retain their distinguishing appellations, though now variously applied, some to quarters for officers of the garrison, some to private individuals, and one, having the only large room floored with plank in the town, has become the scene of public assemblies. Valetta has its banks and exchanges, and there are also public hospitals, a very good theatre, and coffee-houses fitted up with marble, where the visiter may enjoy that luxury in a hot climate, ice, brought over from Etna. There are two libraries, one which belonged to the Knights, comprising about 40,000 volumes of Greek, Latin, French, and Italian works; the other a subscription library, established by the English residents.

Valetta, on the whole, is a gay and interesting place, not only from its former eventful history and chivalrous masters, but from its present state. Its commercial activity, its political importance, and its central situation in the Mediterranean, all conduce to make it the resort of a great variety of nations, ranks, and characters, from all quarters of the globe.

WHAT DOES THAT YOUNG MAN DO FOR A LIVING?

"WHAT does that young man do for a living?" is the common inquiry, as some foppish, well-dressed individual passes by. "Nothing—nothing at all," is the frequent reply. "But what supports him in his extravagance?" None can tell—but we, being a Yankee, have the privilege of guessing. That young man that dresses in broadcloth, carries a cane, and is so extremely polite to all his acquaintance—especially the ladies—is the son of a man in moderate circumstances, who finds it difficult to sustain himself with a moderate income. His son wishes to be a gentleman, and lives without labor. The father in his folly refuses to put him to a trade, or send him to work on a farm, hoping that something may turn up, by and by, when business will be better, for his son to obtain a good living without work. He is now obliged to dispense with the luxuries of life—perhaps with some of its comforts, for his son to keep up appearances, and get into good society, as that kind of company is termed,

where young men have nothing to do but to dress according to the latest fashions. He is quite independent, and uses language to his seniors that might be considered uncourteous in a king. He faces all classes and conditions without a blush, and dares to look with contempt on the honest apprentice, whose generous soul would outweigh a thousand as light as his own. The companions he chooses are like himself, puffed up with vanity, swelling with importance, and who make a pretence of doing something, by occasionally visiting a lawyer's office, to read a page or two of Blackstone. The end of such a youth it needs no prophetic vision to see. "It is as plain as the way to market," as Dr. Franklin would say, that he will turn out a low, despised, and miserable tool. Perhaps the Penitentiary will bring him up, perhaps the gallows. But if he escape these, it will be to hang like an incubus on those of his friends, who, for pity's sake, have not the heart to send him where he deserves.

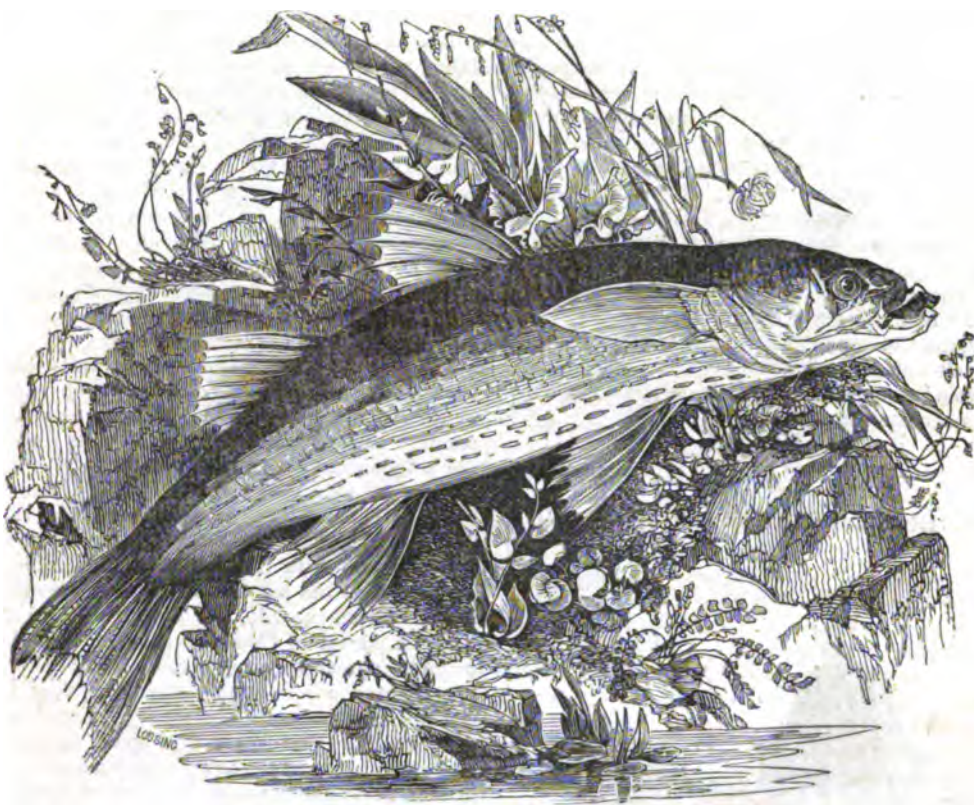
The above is a true picture of many of the young men who may be seen daily in our streets. You meet them at every corner, in all public resorts, at all parties of pleasure, riding, sailing, laughing, talking, joking eternally, apparently with money enough, more impudence, and less brains. But how they all contrive to keep body and soul together, without work, always spending, and never earning, we confess is sometimes a mystery to us. When a project of pleasure is talked of, the expense is least talked of, and the least considered. Of one thing we are certain, that we are fast verging to a nation of paupers. It is impossible for a people to live long in idleness, enjoying the luxuries and blessings of life, without greatly diminishing the resources of comfort and wealth. To be prosperous as a people, each must do his part—at least do sufficient labor to gain his own support.

Parents are guilty in this matter. They should not permit their great lubberly boys to hang on them for support, when they are well able to labor, and when to work would promote their health, and make them cheerful and happy. You do them a mighty wrong, while you dandle them in folly, and nurture them in extravagance, and tell them how manly they appear, when you know, you must know, the deleterious consequences. If your great boys will not work, you should not support them; drive them away if they are lazy, and it will be for their good and your glory in the end. Let them see that they must depend upon themselves, as you have done before. It is a burning shame for aged parents to be burdened with the support of stout rugged boys, men in size, but pigmies in knowledge, sense, and manners, at the time of life when their children should take them under their protection and care, and provide for their health, comfort, and happiness.

The richest endowments of the mind are temperance, prudence, and fortitude; prudence is a universal virtue, which enters into the composition of all the rest; and where that is not present, fortitude loses its name and nature.

THE GRAY MULLET.
NATURAL HISTORY.

23



The Gray Mullet.

THE GRAY MULLET.

ONE of the angler poets, whom Walton loved to quote, says :—

“ I care not, I, to fish in seas ;
Fresh rivers best my mind do please,
Whose sweet calm course I contemplate,
And seek in life to imitate.”

But the gray mullet only ascends and descends rivers with the flow and ebb of the sea. It haunts the shallow waters on the coast of England, never going far from land ; and though it ventures up rivers, it invariably returns with the tide. Walton does not once mention having angled for the gray mullet, but had he done so, the sport would have called into exercise all his skill and all his patience ; for so careful is it not to swallow any large or hard substance, that it has a trick of getting the bait into its mouth and of rejecting it if suspicion be at all excited. Even if hooked it is often only in the lips, and it then plunges with much violence, and often effects its escape. The gray mullet spawns about midsummer. The general color of the adult is a darkish gray, with a tinge of blue, and the sides and belly, which are white, are marked by dark longitudinal lines. The form of the mouth is very peculiar, and is thus described by Mr. Yarrell :—“ The lower jaw is divided in the middle

by an ascending angular point, which, when the mouth is closed, passes within the upper jaw ; the upper jaw also, if viewed from below, is likewise angular.” Besides the gray mullet there are two other species, the thick-lipped gray mullet, which abounds in considerable numbers on the coast of Cornwall, England, and another, of which Mr. Yarrell caught a specimen at the mouth of Poole harbor, which is remarkable for the shortness of its form. Cuvier remarked that the species of European mullets had probably not been well ascertained. The mullet for which the Romans gave such extravagant prices for their entertainments is altogether a different species.

By experiments which have been made for ascertaining whether salt water fish could be kept in ponds of fresh water, it has been found that the gray mullet has actually improved. Some fry were put into a pond of three acres in Guernsey, when about three inches in length, and in four years they weighed four pounds, and were “ fatter, deeper, and heavier than those obtained from the sea.”

When enclosed within a ground-sein or sweep-net, as soon as the danger is seen, and before the limits of its range are straitened, and when even the end of the net might be passed, it is its common habit to prefer the shorter course, and throw itself over the head-lines and so escape ; and when one of the com-

pany passes, all immediately follow.—This disposition is so innate in the gray mullet, that young ones of minute size may be seen tumbling themselves head over tail in their active exertions to pass the head-line. A mullet less than an inch in length has been known to throw itself repeatedly over the side of a cup in which the water was an inch below the brim. But when a solitary fish has been left in the net, and all means of escape are prevented, it will then make a desperate effort to pass through one of the meshes, retiring previously to the greatest possible distance, and then rushing at once towards that part of the net which appears to offer the most inviting chance of escape; when it finds itself held by the middle, it then quietly submits to its fate. Carew, the Cornish historian, kept some gray mullets in a salt-water pond, which became so tame, that they would assemble together at a certain noise which he was accustomed to make.

ANCIENT CHURCHES OF ENGLAND.

No. I.



ST. PANCRAS OLD CHURCH, LONDON,

Is a quaint old Gothic pile, built of stones and flints, and certainly as old as the thirteenth century. Now that it is coated with plaster, it has lost a good deal of the forsaken, weather-beaten, decaying look of which the old chronicler speaks; albeit more than five centuries have passed away since its foundations were laid. It is small, and consists of a nave and chancel, having at the west end a low tower, and "dome-like roof." In the old records of St. Paul's (Lib. L.) is a visitation, which took place in 1251,

wherein this church is described as having "a small tower, a good stone front, and a small marble stone, ornamented with copper, to bear the *pax*." Weever speaks of a "wondrous antient monument," by tradition, said to belong to the family of Gray, of Gray's Inn. The church and its now well-thronged graveyard have been long noted as the burial-place of such Roman Catholics as die in London. Almost every tomb bears a cross, and the initials of *Requiescat in pace*. May they rest in peace! It has been assigned as a reason for this, that in the south of France still stands another such old church, dedicated to the same saint, in which masses are said for the souls of all the dead interred at St. Pancras in England. Here also, it is said, hangs the last bell which tolled for mass in that country.

Like all old English churches, its walls still strive to rescue from oblivion the names of such as moulder in their neighborhood. Old Pancras has its monuments. Some families connected with property in the neighborhood of course find place: A "London merchant," also, who witnessed the "Great Fire;" "Daniel Clarke, Esq., who had been *cook to Queen Elizabeth*;" Samuel Cooper, a miniature-painter, who was intimate with the author of "*Hudibras*," and whose pencil has left us likenesses of the most celebrated statesmen, wits, and beauties of his stirring age. A portrait of Cromwell is his chief work. His manner approaches closely to that of Vandyke, and his pictures are in great esteem all over Europe, fetching great prices. Cooper was related to Pope, too; his wife was sister to Pope's mother. The churchyard, likewise, has its monuments: Woodhead, a great champion of the Romish faith, and by some reputed the author of "*The Whole Duty of Man*;" Leoni, a Venetian, architect to the Elector Palatine, who died here just a century ago; also a Count of the Holy Roman Empire, de Haslang, envoy from the Elector Palatine to the court of England. To the list the last few days has added another name, in that of Dr. Kenny. Of the worthies associated with the church, those of Paley and William Sherlock may be remembered. They were both prebends of Pancras. Close by is a chapel, and behind it a tomb erected by Sir John Soane, the donor of the Soane Museum, which is an object worthy of notice.

HOPE.—BY SCHILLER.

WE speak with the lip, and we dream in the soul,
Of some better and fairer day;
And our days the meanwhile, to that golden goal,
Are gliding and sliding away.
Now the world becomes old, now again it is young,
But "the better" 's for ever the word on the tongue.

At the threshold of life Hope leads us in—
Hope plays round the mirthful boy;
Though the best of its charms may with youth begin,
Yet for age it reserves its toy.

And is it not a dream of a fancy proud,
With a fool for its dull begetter?
There's a voice at the heart that proclaims aloud,
"Ye were born to possess the better!"
And that voice of the Heart, O ye may believe,
Will never the hope of the soul deceive!



March of a Caravan.

CARAVANS.

IN Arabia, Syria, Nubia, Persia, Asia Minor, North Africa, and other portions of eastern countries, where the routes from place to place are infested with wandering hordes of robbers, and long dreary tracts of sterile land are to be crossed; where the desert is like "a sea without waters, an earth without solidity, disdaining to hold a foot-print as a testimony of subjection,"* travellers are accustomed to associate in large numbers, and make their journey in a body, for safety and convenience. A travelling company of merchants or pilgrims (for commerce, or devotion, or both, may be the object of their journey) is termed a caravan, from the Persian word *cârvân*. It is needless to state that the camel, the "ship of the desert," is the only animal capable of enduring the hardships of a journey across the arid and sandy plains, and at the same time to carry on its back a considerable burden. Horses do accompany the caravans, but unless the patient camel bore skins of water for their use, they would perish of thirst. The camel is capable of enduring ten days' thirst, and is commonly three or four days without water, drinking only at the fountains and watering-places, while one camel is requisite to carry water for each horse for its daily wants.

The earliest mention of commerce in the sacred writings shows the little alteration which has taken place in the East in the mode of carrying on commercial intercourse. When the brethren of Joseph

* "Purchas, His Pilgrimage."

had cast him into a pit, they beheld a company of Ishmaelites coming from Gilead, "with their camels bearing spicery, and balm, and myrrh, going to carry it down to Egypt;" and in the present day, the caravans of Egypt and Arabia are carrying on the traffic which they did in the patriarchal age and in the less simple days of Solomon; the merchandise being nearly the same, and the manner in which trade is conducted offering no striking difference. In these countries there cannot be a cheaper mode of transporting goods and objects of traffic. The traveller Burckhardt says: "In countries where camels are bred in great numbers, land-carriage is almost as cheap as that by water. The carriage for a camel-load of goods, weighing from six hundred to seven hundred pounds English, from Bagdad to Aleppo, a distance of six hundred miles, is £4." The caravans are designated light or heavy, according to the load which the camels bear. Six or seven cwt. is the average burden of a camel. They carry millstones nearly six feet in diameter to the large towns on the west of the Jordan; heavy goods in large panniers; and bales of merchandise are strapped on their backs, being fastened round the body with cordage or leather thongs. They are also made to carry a sort of litter in which women and children ride. The camels employed in the carriage of heavy burdens are to other descriptions of the same animal what the dray-horse is to the hunter or the race-horse.

A pilgrim caravan, in crossing the African deserts, presents a most singular sight. A traveller who witnessed the setting out of one of them from



Cairo, several years ago, has given the following minute description of it. The cavalcade, he says, was six hours in passing him!

The most striking appearance was the camels in their splendid trappings, laden with provisions, and clothes, culinary apparatus, water-skins, tents, artillery, and holy Sheiks and Mamelukes. There were camels "with two brass field-pieces each"—others "with bells and streamers"—others "with men beating kettle-drums"—others "covered with purple velvet"—others "with men walking by their sides, playing on flutes and flageolets"—others "handsomely ornamented about their necks, their bridles being studded with silver, intermixed with glass beads of all colors, and ostrich-feathers on their foreheads"—and last of all "the sacred camel, an extraordinary large camel, with a fine bridle studded with jewels and gold, and led by two holy Sheiks, in green,—a square house or chapel on his back." In addition to these camel splendors, there were horses with every variety of caparison; Mamelukes, and pikemen, and Janizaries, and agas, and the commander of the pilgrimage, in robes of satin—to say nothing of numberless "buffoons playing many pranks."

Differing from the usual practice of commercial caravans, the pilgrimage is performed chiefly by night. The caravan generally moves about four o'clock in the afternoon, and travels without stopping till an hour or two after sunrise. A large supply of torches is carried from Cairo, to be lighted during the hours of darkness. The Bedouins, who convey provisions for the troops, travel by day only, and in advance of the caravan. The watering-places on the route are regularly established. Each is supplied with a large tank, and protected by soldiers who reside in a castle by the well, throughout the year. On parts of the route the wells are frequent, and the water good; but on others, three days of the journey frequently intervene between one watering-place and another, and the fountain is often brackish.



When the Cairo caravan is completely assembled, and the formalities which we have just described are gone through, the great body of travellers begin to move, the stations of the different parties of Hadjys, according to their provinces and towns, being appointed, and rigidly observed throughout the march. This order is determined by the geographical proximity of the place from which each party comes. At

Adjeroud, where the Egyptian caravan halts on the second day's march, it is supplied with water from Suez; and here it reposes a day and a night, to prepare for a forced march of three days and two nights, through a region where there is no water, the desert of El Tyh, which nearly extends from the head of one gulf of the Red Sea to the other—that is, from Suez to Akaba.

It is here that the privations both of men and quadrupeds commence. The splendid trappings of the camels, their velvets and their bells, have lost their attraction; but their power of endurance becomes the safety of the pilgrims: while the richly-caparisoned horse, impatient of thirst, and more easily subdued by fatigue, is more frequently a burden to the caravan than an advantage.

The route of the Egyptian caravan, after it passes the Akaba, lies by the shores of the Red Sea for nearly six hundred miles; and, therefore, it cannot properly be said at any time after the first ten days' march to be upon the desert, as the Syrian caravan is for thirty days. But its difficulties are more numerous; and it has to pass regions quite as arid and inhospitable. Every part of Arabia is covered with sandy plains; and when the mountain-steeps are crossed, the long extended valleys rarely offer water. The Arabic language is rich in words expressing every variety of desert, differing from each other by very slight shades of meaning: thus, they have terms descriptive of a plain—a plain in the mountain—a plain covered with herbs—a naked sandy desert—a stony desert—a desert with little spots of pasture—a desert without water.

The mean daily rate of the heavy caravan is eighteen miles, and a journey of above six hundred miles is performed in thirty-five days. The camels which are distinguished for their speed rather than their capability to carry heavy loads, will perform thirty-five days' travelling of the heavy caravans in five days. Some of them will continue at a long trot of nine miles an hour for many hours together, and several travellers have stated their speed to be kept up for nine or ten hours at the rate of seven or eight miles an hour. During the journey of the heavy caravans, the camel will undergo privations which no other animal is capable of enduring. This ancient mode of commercial intercourse has not continued for so many ages without attempts being made to diminish the hardships to which those who are engaged in it are exposed. Reservoirs of water have been established in the route of the caravans, which offer a seasonable supply to their most urgent necessities; but in the desert, for several days' journey, no such resource is to be obtained, and it is necessary to convey the requisite quantity of water in skins. Sometimes a certain number of camels in the caravan carry nothing but water-skins; but generally each camel carries one in addition to its ordinary burden. A middle-sized skin, holding about fifty pints of water, is the ordinary calculation for three days' consumption for one man. It is the general custom, says Burckhardt, never to drink except when the whole caravan halts for a few minutes for that purpose. To drink in the interval is considered

effeminate, and exposes a man to the opprobrious saying that "his mouth is tied to that of the water-skin." The thirst experienced in the desert is frequently intense. That singular phenomenon, the *mirage*, places before the fainting traveller cool and translucent pools or lakes, which vanish on his approach, only again to excite his hopes and mock him with disappointment. In the mean time, the simoom, a violent south-east wind, heats the atmosphere to an almost insufferable degree, and loads it with dust and sand. It stops perspiration, dries the palate, and creates a painful degree of restlessness and anxiety. If the next fountain should be dry, cattle and men perish in despair. In a part of the desert near the head of the Red Sea, says Burckhardt, "the bones of dead camels are the only guides of the pilgrim through the wastes of sand." It is not often, however, that the dangers which the desert presents are fatal. One of the worst effects of the simoom is to dry up the water in the skins, unless they are made of thick and well-prepared cow leather. If the water is contained in skins of sheep or goats, it will sometimes happen that a third of the contents of a full water-skin will be evaporated in a morning. Life itself may depend upon the quality of the material which contains the precious element. In cases where little or no hope of saving life remained, camels have been killed for the sake of the water contained in their stomach. The Bedouins take possession of the wells, and exact a tribute for permission to draw water. After enduring excessive thirst, the gratification of slaking this consuming appetite with fresh water is a delicious luxury, and it is not sparingly indulged. The camel also takes in a supply for its future necessities, and will sometimes drink one hundred pints. The hardships of the desert, therefore, are not without enjoyments to counterbalance and compensate for their severity. The arrival at the wished-for fountain—the song of the birds in the aromatic plants which perfume the oasis—the impressive silence around—each communicates intense delight; and those dreams of the imagination which the absence of common world-day objects excites, are all peculiar to the desert. The halts of the caravan are exceedingly picturesque and curious. For about two hours at noon, when every one endeavors to sleep, and from an hour or so before the sun goes down to the gray twilight of morning, are the periods of repose. To relieve the monotony of the desert, Mr. Buckingham tells us in his "Travels" that he was accustomed to mount his horse the last in the caravan, and by proceeding at a gentle pace, he could gain the head of it in a couple of hours, passing thus in review, in the course of that time, a line extending above two miles in length. Himself and the other horsemen of the party could then dismount on the grass, allow their horses to feed around them, and either smoke or take some repose, until, in about an hour, the caravan had again passed.

The commercial caravans, it is evident, afford the great means of interchanging commodities between countries, which would otherwise be cut off from nearly all commercial intercourse. The caravans of Egypt bring to Cairo ostrich-feathers, gum, gold-



Loaded Camels.

dust, and ivory, from Abyssinia and the countries beyond it; while those of Arabia exchange the spices, coffee, perfumes, and muslin of Hindoostan.

Asia and Africa are the indigenous countries of camels and caravans, which are the means of advancing and promoting the business, and even the higher interests of life. Without commerce, the inhabitants of many parts of Asia and Africa would be condemned to a state of existence deprived of almost every enjoyment; but the camel, which has been most bountifully bestowed upon these arid regions, has facilitated men's intercourse with one another, though the state of these countries has rendered it necessary for merchants and traders to consort with each other in large companies for mutual protection, just as in time of war fleets of merchantmen proceed under convoy. The caravans which travel from the coasts of Egypt, Tripoli, Tunis, Algiers, and Morocco, to Timbuctoo, the great mart of central Africa, are represented as being eighteen weeks in proceeding from the border of the desert. They meet caravans from places in the interior which have never been reached by Europeans. The goods displayed in the markets of Thibet, and those which come from the remotest recesses of Africa, are thus exchanged. The African caravans, it is said, carry coal through the desert.

The annual pilgrimage to Mecca, one of the observances enjoined by the Mohammedan religion, is a bond uniting its followers from Abyssinia to India. The splendor of these pilgrimages has declined in latter days. In the year 1254, the caravan of the mother of Moslem b' Illah, the last of the Abbassides, was composed of 120,000 camels; but the Syrian caravan, which is now the largest, did not number more than 15,000 camels in 1814, according to Burckhardt. The pilgrimage from Damascus to Mecca cannot now be performed in the least ostentatious manner for less than £125; and of the number of pilgrims who compose a caravan, it is quite certain that the majority have not the means of obtaining so large a sum. It is said, indeed, that not one tenth of the individuals who proceed to Mecca are real pilgrims; the remainder consisting of peddlers, soldiers, servants, camel-drivers, mendicants, and persons who for a certain sum perform the pilgrimage by proxy. An ostentatious magnificence distinguishes the richer pilgrims, but the misery of others is perhaps still more prominently displayed. The rich sleep at ease in their litters, and are surrounded by luxuries even in the desert, while the poorer class endure extreme misery, are plundered and often murdered by the Bedouins. From five to seven great

caravans arrive at Mecca every year after the feast of Bairam. There is the Syrian caravan, which has to perform a journey of thirty days across the desert from Damascus to Medina; the Egyptian caravan, which starts from Cairo, and has a dangerous and fatiguing journey, having few watering-places on the route, and being exposed to the attack of the Bedouins; the Persian caravan, coming from Bagdad, and an African caravan from Morocco and the coast of Egypt. The caravan from Yemen, consisting of Persians and Indians, is discontinued, as the pilgrims now make the journey by sea. From every part of the desert, and from the most distant recesses in which the Mohammedan religion is professed, pilgrims come forth to swell the number of the great caravans, or to form smaller distinct bodies. Besides the devotional feelings which are satisfied by a visit to the tomb of the prophet, the pilgrim earns distinction in the eyes of his fellow-men, and assumes the rank of a hadji on his return.

MODES OF SALUTATION.

GREENLANDERS have none, and laugh at the idea of one person being inferior to another.

Islanders near the Philippines take a person's hand or foot, and rub it over their face.

Laplanders apply their noses strongly against the person they salute.

In New Guinea, they place leaves upon the heads of those they salute.

In the Straits of the Sound they raise the left foot of the person saluted, pass it gently over the right leg, and thence over the face.

The inhabitants of the Philippines bend very low, placing their hands on their cheeks, and raise one foot in the air, with the knee bent.

An Ethiopian takes the robe of another, and ties it about him, so as to leave his friend almost naked.

The Japanese take off a slipper, and the people of Arracan, their sandals, in the street, and their stockings, in the house, when they salute.

Two Negro Kings on the coast of Africa, salute by snapping the middle finger three times.

The inhabitants of Carmene, when they would show a particular attachment, open a vein, and present the blood to their friend as a beverage.

If the Chinese meet, after a long separation, they fall on their knees, bend their face to the earth two or three times, and use many other affected modes. They have also a kind of ritual, or "Academy of Compliments," by which they regulate the number of bows, genuflexions, and words to be spoken upon any occasion. Ambassadors practise these ceremonies forty days before they appear at court.

In Otaheite, they rub their noses together.

The Dutch, who are considered as great eaters, have a morning salutation, common amongst all ranks, "Smaakelyk eeten?" "May you eat a hearty dinner." Another is, "Hoe vaart a awe?" "How do you sail?" adopted, no doubt, in the early periods

of the republic, when they were all navigators and fishermen.

The usual salutation at Cairo is, "How do you sweat?" a dry hot skin being a sure indication of a destructive ephemeral fever.

Some author has observed, in contrasting the haughty Spaniard with the frivolous Frenchman, that the proud, steady gait and inflexible solemnity of the former, were expressed in his mode of salutation, "Como esta?" "How do you stand?" whilst the "Comment vous portez-vous?" "How do you carry yourself?" was equally expressive of the gay motion and incessant action of the latter.

The common salutation in the southern provinces of China, amongst the lower orders, is, "Yafan?" "Have you eaten your rice?"

In Africa, a young woman, an intended bride, brought a little water in a calabash, and kneeling down before her lover, desired him to wash his hands; when he had done this, the girl, with a tear of joy sparkling in her eyes, drank the water; this was considered as the greatest proof she could give of her fidelity and attachment.

FIRST SETTLEMENT OF THE UNITED STATES.

BELOW we give a table which many may consider worthy of preservation for future reference, showing at what time, and by whom, the several states were originally settled.

<i>States.</i>	<i>Dates.</i>	<i>Oldest towns.</i>	<i>By whom.</i>
Florida,	1565	St. Augustine,	Spanish.
Virginia,	1607	Jamestown,	English.
New York,	1614	Albany,	Dutch.
Massachusetts,	1620	Plymouth,	English.
New Hampshire,	1623	Dover,	do.
New Jersey,	1624	Bergen,	Danes.
Delaware,	1627	Cape Henlopen,	Swedes.
Maine,	1630	York,	English.
Connecticut,	1630	Windsor,	do.
Maryland,	1633	St. Mary's,	do.
Rhode Island,	1636	Providence,	do.
North Carolina,	1650	Albemarle,	do.
South Carolina,	1670	Port Royal,	do.
Michigan,	1670	Detroit,	French.
Pennsylvania,	1682	Philadelphia,	English.
Illinois,	1683	Kaskaskia,	French
Arkansas,	1685	Arkansas Post,	do
Indiana,	1699	Vincennes,	do.
Louisiana,	1699	Iberville,	do.
Alabama,	1702	Fort near Mobile,	do.
Mississippi,	1716	Natchez,	do.
Vermont,	1725	Fort Dummer,	do.
Georgia,	1733	Savannah,	do.
Tennessee,	1756	Fort London,	do.
Missouri,	1763	St. Genevieve,	do.
Kentucky,	1775	Boonsborough,	D. Boon.
Ohio,	1780	Marietta,	Emigrants
		[from New England.	



Tobacco Warehouse.

A DAY AT A TOBACCO MANUFACTORY.

IN inviting the reader to accompany us in a rapid review of the processes by which tobacco, cigars, and snuff are produced, we feel that we must not indulge in many remarks on either the use or the abuse of this plant. There is certainly a strong temptation so to do, when we are told in 'Dr. Everard, his discourse of the wonderful Effects and Operation of Tobacco,' that the use of this plant will stay hunger and thirst, cure the dropsy, ease diseases of the head, catarrhs, and headache, cure dimness of sight, deafness, redness of the face, toothache, ulcerated gums, swelling of the throat, diseases of the chest, stomach pains, surfeit, swooning, colic, diseases of the liver and of the spleen, sciatica, burns, wounds, scalds,—and likewise effect cures of all sorts of complaints in all sorts of animals. But unfortunately we have the fear of King James's 'Counterblast to 'Tobacco' before our eyes, as well as the anathemas of sundry other writers. We must therefore be content to treat the matter in a commercial and manufacturing character; previously quoting Mr. Porter's remark, that—'Tobacco is, perhaps, an object of more general use than any other production of the vegetable kingdom; and if we consider that in no sense can it be classed among articles necessary for human subsistence, this fact is calculated to excite our surprise as well as interest. The love of tobacco is evidently an acquired taste; yet it is

one so easily and universally acquired, that this weed forms a luxury which is enjoyed in common by the African negro, the unclothed and houseless wanderer of Australia, the hardy American Indian, the slothful Asiatic, and every class of people throughout the more polished countries of Europe."

The botanical name for the tobacco plant is *Nicotiana*, given to it in honor of Jean Nicot, Lord of Villemain, who was ambassador from France to Portugal about the time when the plant was first brought to Europe. It is supposed that he introduced it first into France, as Sir Walter Raleigh did into England. There are seven species of the *Nicotiana*, of which only one, the *Nicotiana Tabacum*, need be particularly described. There are two varieties of this species, both annual herbaceous plants, rising with strong erect stems to the height of from six to nine feet, their foliage being fine and handsome. When full grown the stalk near to the root frequently attains a size greater than an inch in diameter; it is surrounded by a hairy clammy substance of a greenish yellow color. The leaves, which are of a light green, grow alternately at intervals of two or three inches on the stalk; they are oblong and spear-shaped; those lowest on the stalk are about twenty inches long, and they decrease in size as they ascend, the top leaves being only ten inches long and five broad. The young leaves, when about six inches long, are of a deep green color, and rather smooth; but as they approach maturity, they assume a yellowish tint,

and have a rougher surface. The flowers grow in clusters from the extremities of the stalks; they are yellow externally, and of a delicate red within; the edges, when they are full blown, rather inclining to purple. These flowers are succeeded by kidney-shaped capsules of a brown color, each one of which contains about one thousand seeds, so that the whole produce of a plant has been sometimes estimated at three hundred and fifty thousand seeds.

In Virginia (the centre of the tobacco-growing districts) the kinds of soil chosen for the cultivation of the plant are the chocolate-colored mountain-lands, and the light black soil in the coves of mountains, and the richest low grounds. The ground is prepared in two ways, one for the seed, the other for the transplanted sprouts. The seed is sown in nursery-beds, called *patches*, bordered by some plant which will arrest the progress of the ravaging fly; and is effected generally about March or April. In a month's time the young sprouts being ready for transplanting, ground is prepared for their reception. Hillocks, about eighteen inches high, are raised in parallel lines, four feet apart in one direction, and three feet in another. The sprouts, being about five inches high, are carefully taken out of the ground without injury to their tender rootlets, and conveyed to the field in a basket. One person places a sprout upon every hillock; and others, who follow him, make a hole with the finger in the centre of each hillock, and deposite the tobacco plant in an upright position, pressing the earth round the root with the hands. This is an operation of great delicacy, as the leaves are exceedingly tender at this time, and any injury sustained by them would endanger the safety of the plant.

When the plant has attained the height of about two feet, it is *topped*, that is, the upper part is cut or pinched off, leaving such a portion of the stem as contains from five to nine leaves.

When the plants are in a fit state for being cut, (at which time the leaves have changed their color to a yellowish green, the substance of the leaf is thickened, and the web more prominent,) the cutters, each of whom is furnished with a sharp strong knife, proceed regularly along the rows of plants, cutting only such as appear to be ripe, leaving the rest for future operations. This selection is necessary, because if the tobacco be cut before it is fully ripe, it will not assume a good color, and will be liable to rot when packed into hogsheads. The stalks are cut almost close to the ground; and such of them as are sufficiently thick are slit down the middle, in order to admit the more unobstructed access of air, and the evaporation of natural moisture. The cut and divided stalks are then laid down in regular order on the ground, the extremities of the leaves all pointing in the same direction, that they may be more easily gathered. This gathering is effected after a short exposure to the sun.

The next part of the process is the *curing* of the tobacco, which is carried on in large barns, whose sides are left partially open to allow a free circulation of air; and the internal area of the building, including the roof, is occupied by horizontal poles

stretching across the barn in a parallel direction, and four feet asunder. These poles are connected together by cross pieces called tobacco-sticks, upon which the leaves are hung in order to be cured. There are several stages of these poles and sticks, one above another, a perpendicular space of four feet being left between them. The plants are carried to the curing house as soon as the leaves have lost so much of their rigidity and brittleness as to bear handling without breaking; and the operation of hanging them is then effected, by suspending the plants upon the sticks with the points of the leaves downwards, resting them either by the stalk of the lowest leaf, or by the slit which has been made in the stem. Each stick, after being loaded with plants placed four or five inches apart, is conveyed to the stage of poles to which it belongs; and the whole area of the barn becomes thus filled with the plants, no two touching each other.

The unassisted action of the atmosphere produces, in a general way, that effect for which this process is undergone; but it is sometimes necessary to have small smothered fires of rotten wood or bark, in the barn, to counteract the effects of an unfavorable state of the weather. An exposure to the air for a period of about five weeks, makes the leaves of tobacco elastic and tough, and slightly covered with a glossy kind of moisture. The tobacco is then said to be *in case*, and is taken down from the sticks, in order that the stalks may be separated from the leaves. The general plan is, for a party of negroes, men, women, and children, to sit in a circle on the floor of the tobacco-house, and to pull the leaves from the stalks, handing the former to two men placed in the centre, who distribute them into separate heaps according to their qualities. The lower or ground leaves, being generally soiled and torn, are separated from the rest; while of those produced in the higher part of the stalk, some are inferior to others; the whole are therefore distributed into three heaps.

Manufacturers distinguish between 'strip' and 'leaf,' or 'strip-leaf' and 'hand-work,' the former of which is the technical name for tobacco from which the stem of the leaf has been taken away before the latter is packed in the hogshead; whereas 'hand-work' is the name applied when the leaf is packed whole, stem and all. The stripping is effected by taking the leaf in one hand, and the extremity of its stem in the other, in such a manner as to tear them asunder in the direction of the fibre, a process requiring some degree of expertness; but whether the leaves are stripped or not, the subsequent processes are nearly the same. The leaves are tied up in small bundles by a bandage at their thicker end, a small leaf being employed for that purpose by twisting it round the others, and securing its end in a kind of knot. Each little bundle of those leaves from which the stalks have not been removed, is called a *hand*, and is, at the end where it is tied, somewhat thicker than a man's thumb, the length being from one to two feet, according to the kind of leaf. The 'strip-leaf' presents a slightly different appearance. All the bundles are then thrown together in heaps, on a wooden platform, where they undergo the process

of *sweating*, which is in its nature a slight degree of fermentation.

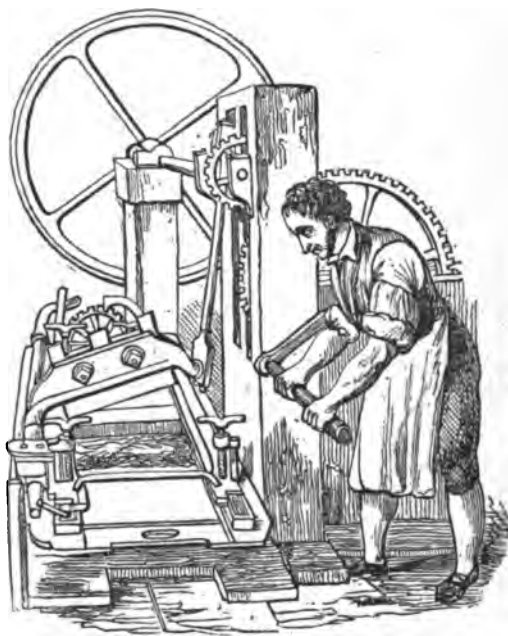
Packing for shipment is the next operation. The tobacco is packed in hogsheads, and there are three reasons why it is desirable to compress it into as small a space as possible—the expense of freight is considerably lessened by lessening the bulk, the tobacco is rendered less liable to external change by the air being nearly expelled, and the reception of moisture, or of injury from without, is rendered less likely to occur. Instances have occurred where vessels have been stranded, and their cargoes of tobacco, although long covered by sea water, have yet been found on examination to be only very partially damaged on the outside: the middle, from one or two inches inward, proving perfectly sound and dry. The casks are made perfectly dry for the reception of the tobacco, which is then deposited in them, the little bundles or *hands* being ranged one by one, parallel to each other, across the hogshead, the points all in the same direction. The next course or layer is reversed, the points being in the opposite direction; and any small spaces that may occur are filled up with bundles of less size, so as to bring all to a level. When the hogshead is about one quarter filled in this way, a powerful lever press is applied to the surface of the tobacco, so as to reduce the thickness from about twelve inches to three. The lever is kept in its position for several hours, in order that the tobacco may become so completely consolidated that it will not spring up again when the pressure is removed. Fresh portions are then laid in the hogshead, and treated in a similar manner, until the whole space is filled with a dense and compact mass of tobacco leaves. A hogshead, forty-eight inches in length, by thirty or thirty-two in diameter, will hold one thousand pounds weight of tobacco, when compressed in this way.

The leaf being brought to the manufacturer in hogsheads, he proceeds to give it one of the three forms in which it is used, i. e., tobacco, cigars, and snuff. Most persons are probably aware of the main points of difference between these three forms of the plant; but as all are not so, we may shortly state that common smoking *tobacco* is the leaf, generally divested of the stalk, and also generally cut up into shreds or filaments; *cigars* are bundles of the tobacco-leaf, divested of the stalk, and wrapped up into the close and well known form which those articles present; *snuff* is formed partly of the stalks of the leaves, and partly of the leaves themselves, cut and ground into the state of powder. These are the distinctive qualities in which the three *commercial* forms of the plant differ one from another; but each one of the three has many varieties, arising partly from difference in the quality of the original leaf, partly from the manner in which the leaf is cut, and partly also from the processes preparatory or subsequent to the cutting. It may likewise be here remarked, that the manufacture of the leaf and stalk into the three forms in which the plant is used generally devolves upon three classes of persons. The same man who makes cigars does not generally prepare the tobacco which is smoked in pipes, while the grinding of

snuff is a different occupation from either. The processes, too, are conducted in a somewhat different manner in different houses. We shall therefore state in a simple form the general nature of the processes.

A hogshead of tobacco being opened, and ready for preparation, the plant is dug out piecemeal by the aid of an iron instrument. The bundles of leaves are, as we before observed, compressed so powerfully together, that they become almost one mass; and indeed without the aid of moisture it would be almost impossible to separate them. The heaps, or pieces, are sprinkled with water, a process technically termed '*liquoring*,' by which the bunches of leaves may be separated one from another. If the tobacco is in the form called '*strip-leaf*,' in which the stalk has been removed before the leaves were packed in the hogshead, each separate leaf or half-leaf becomes loosened from the others by the operation of liquoring; but if it be '*hand-work*,' i. e., retaining the stalks, and bound up in bundles called '*hands*,' the liquoring in the first place loosens the bundles one from another, and these being untied, the leaves themselves are separated.

The '*hand-work*' must become '*strip-leaf*' before the tobacco is in a fit state for use, or in other words, the stalk must be taken out. The stripping or taking off of the stalk is effected generally by women or boys. The leaf is folded along the middle, and by means of a small instrument, and a dexterous manœuvre, acquired only by practice, the stalk is stripped from the leaf, and laid on one side,—the leaf being laid in another place by itself.



Cutting the leaves into shreds.

The cutting of the leaves into those fine shreds which form the greater part of smoking-tobacco is not effected leaf by leaf; but a large number of leaves are pressed together in the form of a cake, and then cut. The leaves, after having been separated one

from another, and stripped of their stalks, are moistened to a certain degree, either by sprinkling or by immersion in a liquid prepared for that purpose. This process not only gives to the leaves a degree of moisture which enables them to cake well together, but also has an influence on their subsequent flavor, and is therefore of considerable importance in the manufacture.

The cutting-machine by which the thread-like fibres are produced is represented in the annexed cut, and the mode by which the tobacco is brought into a form fit for placing in the machine is as follows:—On one side of the tobacco manufactory is a powerful press, or a series of presses, capable of operating on a surface fourteen or sixteen inches square. The leaves are taken up out of a trough, in a damp state, and laid in a 'mortar-press,' layer after layer being piled up to a certain height. The whole are then subjected to pressure by means of an iron plate which descends into the press upon the tobacco, and is connected above with the screw of the press. The tobacco is then removed from the 'mortar-press' to the 'standing-press,' where it is pressed into a mass one-third of the thickness which it originally presented. The mass of leaves is allowed to remain in the press several hours, in order that it should not spring up or loosen when the pressure is removed.

The cake is laid on an iron bed, which is susceptible of a slow progressive motion by means of a screw passing beneath it. This screw is connected at one end with a cog-wheel, in such a manner that while the machine is working, the bed on which the tobacco is laid is urged slowly forward. Another part of the mechanism gives motion to a sharp blade, rather longer than the width of the cake. This knife or blade has a reciprocating vertical motion, or rather a motion somewhat similar to that of a pair of nut-crackers, inasmuch as there is a hinge or fulcrum at one end.

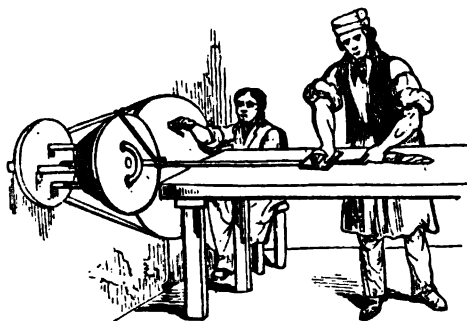
The cake being placed on the bed of the engine, confined in a kind of case or box, the motive-power is applied, and the process of cutting is immediately commenced. The cake is about two inches thick, and each action of the cutting-blade slices off a thin film from one end of the cake. As the cake itself is composed of a very large number of separate leaves of tobacco, it follows that each film or shaving taken from the edge, generally at right angles to the surface of the leaves, must be formed of separate pieces, in no case larger than filaments or fibres. The thickness of these fibres is regulated in a very ingenious manner. Immediately after the blade or knife has made one cut, the cake is moved forward a minute distance, so that the next following cut of the blade may be distant some small space from the former. It depends upon the number of cogs in the wheel at the end of the under-lying screw, whether this distance, and consequently the diameter of the fibres of tobacco, shall be greater or smaller. For one kind of tobacco the cog-wheel contains about thirty cogs, for another about thirty-six; and these produce fibres whose diameters differ in the ratio of thirty-six to thirty, or six to five. To explain minutely how this

difference is brought about is no easy matter. Those who are acquainted with the action of wheel-work will readily understand the nature of this effect; while those who are not, could scarcely understand it from mere description.

When the cake is entirely cut up into shreds, or when, as it is technically termed, the 'box is out,' the engine is stopped, and the cut tobacco, in a clotted and damp state, is taken up and put into a trough or case. A new cake is then adjusted to the bed of the engine, and the operations proceed as before.

Many of the names by which tobacco is known were given from the names of the places whence it was brought, and from other circumstances having but little reference to the quality of the tobacco. 'Oronoco,' a name given to one kind of tobacco, was probably derived from the South American river of that name. 'Kanaster' or 'Canaster' was originally the name given in America to baskets of rushes or cane, in which they put the tobacco sent to Europe; and hence the designation of 'Kanaster tobacco' was given to the leaves exported in those baskets. At present the two kinds known by these respective names are manufactured from the best leaf, generally from Havana. Oronoco is cut finely, somewhat similar to fine 'shag,' a very strong kind of tobacco; but Kanaster is much coarser. This forms the chief difference between the two kinds, the quality and preparation of the leaves being in other respects about equal.

We must not omit to mention a kind of tobacco which glories in the name of 'pig-tail.' Pig-tail tobacco is a rope or cord, about equal in diameter to the thicker end of a common tobacco-pipe, and of as great a length as the manufacturer may choose to make it. The manufacturer of this article requires the simultaneous aid of a man and two boys. The



Manufacture of 'Pig-tail.'

bench employed is several yards in length, and at one end of it is a kind of spinning-wheel, which is kept in rotation by one of the boys. The other boy has spread out before him a supply of leaves, deprived of the stalks, and in a damp state. He opens the leaves one by one, and lays them down on the bench, end to end. The man follows him, and rolls up these successive leaves into the form of a cord, by a very peculiar motion of both his hands. The length of 'tail' which happens to have been made at any one moment is kept constantly rotating by the

action of the wheel, and the man adding leaf after leaf to it with the left hand, presses and rolls it by means of a palm of leather or wood held in his right. The manœuvre is so quick and so dexterous, that a spectator can hardly see where or how the leaf becomes absorbed into the 'tail,' and made part of its substance: it is one of those operations of which manufactures present such numerous examples, in which considerable skill and 'knack' are required for an apparently simple operation. As the tobacco is spun, it becomes wound off at the same time on a frame connected with the spinning-wheel. The pig-tail is afterwards wound or twisted up into a hard close ball, and has a black color given to it by steeping in tobacco-water.

In the next two cuts we have represented a man preparing the leaves for the cigar-maker, and another making the cigars. The unstripped leaves, *i. e.*, the leaves from which the stalks have not yet been removed, are placed in front of the first-mentioned workman; he takes up the leaves one by one, folds them, strips off the stalk by a quick and dexterous movement, throws the stalks on his right hand, and lays the stripped leaves smoothly on his left. He is on the left side of the cigar-maker, to whom he hands up the leaves as fast as they are wanted.



Preparing the leaves.

The cigar-maker is seated on a low stool in front of a low work-bench, which has raised ledges on three of its sides, but is open at the side next the workman. He takes a leaf of tobacco, spreads it out smoothly before him on the bench, and cuts it to a form somewhat like that of one of the gores or stripes of a balloon. He then takes up a few fragments of tobacco-leaf, consisting of various small cuttings, lays them on the spread leaf, and rolls them up into a form nearly resembling that of a cigar. He next places this cigar against a gauge or guide, formed of a piece of iron, and cuts it to a given length. Finally, he lays a narrow strip of leaf on the bench, and rolls the cigar spirally in it, twisting one end to prevent the leaf from becoming loosened. All this is done with great rapidity, a few seconds only being required for the making of one cigar. When the

cigars are made, they are dried in different ways, according to the time when they are wanted for sale.



Making Cigars.

We have next to direct our attention to the third form in which the plant is used, *viz.*, *snuff*. This article has been the theme of as many grave accusations as tobacco in the form for smoking; but the grave accusations have been as fruitless in the one case as the other. Some have treated the matter in a medical point of view; others, in reference to the welfare of the purse; while Lord Stanhope has taken the following curious statistical estimate of the matter:—"Every professed, inveterate, and incurable snuff-taker, at a moderate computation, takes one pinch in ten minutes. Every pinch, with the agreeable ceremony of blowing and wiping the nose, and other incidental circumstances, consumes a minute and a half. One minute and a half out of every ten, allowing sixteen hours to a snuff-taking day, amounts to two hours and twenty-four minutes out of every natural day, or one day out of every ten. One day out of every ten amounts to thirty-six days and a half in a year. Hence, if we suppose this practice to be persisted in for forty years, two entire years of the snuff-taker's life will be dedicated to tickling his nose, and two more to blowing it. The expense of snuff, snuff-boxes, and handkerchiefs will be the subject of a second essay, in which it will appear that this luxury encroaches as much on the income of the snuff-taker as it does on his time; and that by a proper application of the time and money thus lost to the public, a fund might be constituted for the discharge of the national debt." We cannot enter upon this "second essay," nor upon the patriotic plan alluded to in the last sentence, but must at once proceed to the only part of the subject which this paper relates to, *viz.*, the commercial and manufacturing arrangements by which these luxuries are produced.

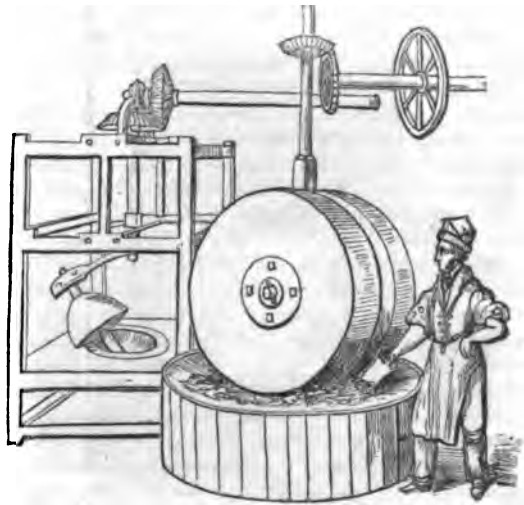
Snuff is made from stalks alone, from leaf alone, or from leaf mixed with stalk,—circumstances which

render the whole of the imported leaf valuable; in every case a greater amount of care is required in the preparation of snuff than of tobacco. The various qualities of snuff are due to a great variety of circumstances, principally under the control of the manufacturer. The purest kind of snuff is that which goes by the name of 'Scotch,' which is either made entirely of stalks, or of stalks mixed with a small proportion of leaf; in either case there is very little 'liquoring' applied to the tobacco, as that would darken the color of the snuff. There are many kinds of snuff called 'high-dried,' such as 'Welsh' and 'Lundyfoot' (the latter being named after a celebrated maker). These owe their qualities chiefly to the circumstance that they are dried so much as to acquire a slight flavor of scorching.

The snuffs called 'rappee,' of which there are two kinds, 'brown' and 'black,' are made chiefly from leaf, to which is added the 'smalls,' or broken fibres of tobacco, which are too small to be smoked conveniently in a pipe. The dark color is principally produced by wetting the powdered tobacco in a bin or box, and allowing it to remain for a considerable time, turned occasionally with a shovel; during which time it undergoes a slight degree of fermentation, which darkens the color.

The original quality of the leaf is as much attended to as the subsequent processes. Scotch snuff is made principally from the stalks of light dry leaves; whereas 'rappee' and the darker snuffs are made from the darker and ranker leaves. A process of *scenting*, too, has great influence on the flavor of the snuff, since the manufacturer can introduce any kind of scent which he thinks may please his customers. Thus, 'Prince's mixture,' among the low-priced snuffs, and the interminable varieties of 'fancy snuffs,' owe no small part of their flavor to the kinds of scent introduced. Other kinds, however, such as 'high-dried,' 'Welsh,' 'Lundyfoot,' &c., are chiefly dependant on the peculiar circumstances under which they are dried. In relation to the last named snuff, Mr. Barlow states—"The celebrated Lundyfoot snuff derives its particular flavor chiefly from having the fermentation carried to a very high pitch before the batch is turned; and it is said that its first discovery was owing to the neglect of the man attending upon the batches, and who, by getting drunk, made his master's fortune. Another story also prevails with respect to the discovery of this snuff, so much esteemed by inveterate snuff-takers, which attributes it to an accidental fire, which, by scorching some hogsheads of tobacco, gave them a peculiar flavor when manufactured. This story is, however, evidently without foundation, as the snuff manufactured by Lundyfoot still continues to retain a peculiar flavor which cannot be imitated by other manufacturers; a circumstance which is not likely to continue if the effect simply depended upon the degree of drying."

There are two kinds of machines for grinding tobacco in manufacturing snuff, one of which is represented on a small scale in the annexed cut. In one of them a pair of cylindrical stones, several feet in diameter and a foot or more in thickness, are set up on



Grinding Snuff.

edge on a slab or bed beneath, and have then a two-fold motion given to them, resembling that of the wheel of a carriage which is going round in a small circle. By means of a horizontal axis passing through the centre of the stones, the stones wheel along the surface of the bed; and by giving to the axis itself a motion round another but vertical axis, the stones are carried round in a small circle. The snuff to be ground is laid on the bed or support, and the broad edge of the heavy stone passes repeatedly over it, by which the particles are reduced to powder.

In the other form of grinding-mill, the snuff is put into a kind of cell or mortar, in which it is ground by a pestle moved in a singular manner. The pestle is connected with a set of jointed arms or levers, so adjusted one to another as to give to the pestle a motion best calculated to effect the grinding of the snuff. Every establishment for grinding snuff contains a considerable number of both these machines; since some kinds of snuff are best ground by the one, and others by the other.

Beyond the grinding, and a preparatory drying, nothing is done to the snuff at the snuff-mills. The proprietor brings it to a certain stage of preparation before it is sent to the mill, and in most cases passes it through some finishing operations after it is brought from the mill.

Tobacco is frequently damaged on its passage from this country to Europe; and in England the damaged portion is burned for the purpose of forming a manure from the ashes. Sometimes, by the action of sea-water or other causes, the exterior portion of a hogshead of tobacco is damaged to the depth of several inches. When this is ascertained to be the case, it is taken into the warehouse, where two men with long knives proceed to cut away the damaged part, after the staves of the hogshead have been removed. This process is seen in the foreground of the frontispiece to this article. The damaged tobacco is then taken to a kiln and thrown into the furnace by an open door, and burned. The greater part of the tobacco is thus consumed; but an ash re



Burning Tobacco.

mains, which is from time to time drawn out of the furnace and thrown into bins or troughs at the side. These ashes are said to form excellent manure, one ton being used to manure four acres of ground. The ashes also constitute a useful kind of tooth-powder.

The duty now paid on tobacco in England, is about *six* times the full value of the article itself; and the time has been when it was *nineteen* times the value. The damaged tobacco the State allows to be burned, without any duty being paid on it. Custom officers have the supervision of the tobacco until the damaged portion is removed, and the remainder carefully weighed, when the amount of duty is duly assessed.

AGRICULTURE.

RENOVATION OF SOILS.

"THERE is in the constituent particles of soils a constant tendency to more minute division. By continual tillage, and the concurrent action of salts, manures, and frost, this division may become so extreme, that at length a soil may be reduced to a fine powder or dust; in which state it will be destitute of substance, and cease to be productive; the rain falling upon it will convert it into mere mire or mud; and this being hardened by the heat of the sun, the air will be excluded, and the roots of plants will be wholly unable to fulfil their functions."

"All these soils" (for instance, where 45 parts of 100 are clay) "are unproductive, and become adhesive and clammy when wet; the water which stands upon them is uniformly turbid and whitish, and particularly so when it is agitated by wind; the effect of heat is to contract and crack their surface, to make it hard, and render it impenetrable to the plough; nor can they be made to any considerable extent productive, *but by the liberal application of coarse undecomposed manures, and especially by ploughing in crops of buckwheat when in flower.*"

It is not my purpose to discuss the question of *renovating soils*, for it has often been ably treated, but to state the result of an experiment in wheat culture, on a soil approximating the above description, quoted from that sterling work of Chaptal, on Agricultural Chemistry. The soil was rather a stiff clay, and having been some thirty-five years in arable condition, and for much of the former part of this time very productive of wheat, it had been, for want of a knowledge of the benefits of the "rotation system," sadly abused. In 1838, it was summer fallowed, having laid the four years previous to sheep pasture, but the crop of wheat which followed was very ordinary, not yielding ten bushels to the acre; which in part arose from the adhesive and clammy nature of the soil, causing the frost to heave a very considerable proportion of the plants on the surface to perish. This is well known to be a very common occurrence, in our climate, with heavy clay lands, if sowed late; but this was not the fact in the last particular, and the growth in the fall was beyond an average. After the crop was harvested, I observed on all parts of the field, numerous cracks on the surface, to a much greater extent than is usual with similar soils. I contemplated giving the field a heavy manuring the following season, and plant with corn; but subsequently changed my plan, having resolved to adopt the course recommended as above, by Chaptal. I consequently applied about twenty-five large cart loads of coarse, unfermented manure, drawn from my sheep-barns, to the acre, which was spread no faster than the ploughs would cover. The plants, in the fall, assumed so dark a green, that I was a little apprehensive of the usual rank growth before harvest, which almost invariably follows the direct application of manure to the wheat crop, as well as large disproportion of straw to the berry. But, doubtless owing to the great poverty of the soil, these results did not follow. The field averaged over twenty bushels to the acre, which is about the average production of well-tilled fallow land, sown timely, and in favorable seasons, in this immediate quarter. The coarse manure had evidently effected a material modification of the soil, as few cracks were distinguishable on the surface, after harvest, showing most clearly, that it was more friable. It is a year ago last spring since the grass seed was sown upon it, and a more luxuriant covering of clover I have rarely seen, than the field now presents; which is another proof of some renovation of the soil, otherwise, very much of the clover would have been thrown out by the frost of last spring. It is my present impression, that if this field is permitted to rest for two or three years longer, and then sowed with buckwheat, and ploughed under when in blow, preparatory to wheat, in consideration of what has already been done, its original fertility will be nearly restored, and in some measure the adhesive and clammy texture of the soil destroyed.

But while on this subject, I beg leave to enter a protest against applying manure—except compost—directly to the wheat crop; unless, as in the above case, when the soil is rendered quite unproductive, by long and "skinning" management, before agri-

cultural periodicals taught us better. You will permit me to quote your remarks, gentlemen, on this point, for I am quite sure they cannot be kept too much "before the people"—from the 7th vol. of the *Cultivator*, taken from a sterling article on "Wheat Culture." "One of the greatest evils of direct manuring for the wheat crop, arises from the liability of the grain so manured, to lodge. The rapid growth of the stem renders it unable to support its own weight, it is soft and flexible, contains much less silex than those grown in a poorer soil; the wheat does not usually perfect its berry, and at all times, from the thinness of the skin or cuticle, it is more liable to mildew and rust. These things render it certainly unadvisable, unless the land is very poor and reduced, to apply unfermented manure to wheat." My own experience, as well as that of thousands of others, in times past, will attest the truth of these remarks. As nearly as possible, my practice conforms to the "rotation system;" and I apply my manure in an unfermented state to my corn and potato crops, and top dressing of meadows.

L. A. MORRELL.

THE GOOD OLD MAN.

FROM THE SPANISH OF CECILIO DE CORFAS.

In the afternoon of a beautiful summer day I walked out to enjoy the freshness of the country. I soon lost sight of my residence, and began to divert my mind with the sight of surrounding objects. Already the sheep were entering their folds, and the cattle, with slow and thoughtful steps, were returning to their sheds, when, in an absent frame of mind, I found myself upon the borders of a lake, and the night closing around. I was contemplating the stillness of the waters, the immense majesty of the heavens, and the beautiful order and harmony of creation, when a voice aroused me from my meditations. I turned my eyes, and observed near me a venerable old man upon his knees, praying with great fervor. I fixed my attention, and heard him utter these words:—

"O thou, whose existence and infinite power are manifest in nature, Father of men, from thy lofty throne, surrounded with innumerable choirs of pure spirits, deign to listen to a feeble mortal, and receive his homage.

"In the silence of the night I raise my voice to adore thee, O eternal Intelligence, who hast created me from nothing. The universe, great God, is thy temple, and the immense heavens are the vault of that magnificent church, whose priest is the pure and innocent man. How can senseless mortals be ignorant of that visible and universal wisdom which governs the world? How, in view of the spheres that revolve above, the deep seas beneath, and the treasures scattered with such profusion over the earth, can they forget their great and benevolent Author?

"I bless thee, thou supreme God, that thou hast cast my lot far from corrupt cities, and hast removed

from me all pride and ambition. Thanks to thy paternal goodness, I have enjoyed for a century the true blessings of life, competence and peace of mind. Thou hast never ceased to lavish upon me the blessings of thy love; even my last days are marked with thy goodness; abundant harvests fill my granaries; thou waterest my meadows, and my trees are exempt from the furies of the wind. To crown my felicity, thou hast reserved to me the partner of my life, and the two children who make the delight of our days. My God! nothing I desire but to die before them! The end of my days draws nigh. Soon my ashes will mingle with those of my fathers. When this shall be verified, I commend to thee my children. Have pity upon their tender mother! Watch over these dear objects! O my God! abandon them never!"

Having uttered these words, his eyes were bathed with tears, deep sighs came from his heart, and respiration was nearly suspended. I imagined I saw something divine shine forth from his countenance. He rose tranquilly and retired to his house, where I heard him long after continuing his blessings to God.

The day began to dawn, and the little birds, with their cheerful songs, announced the rising sun. The laborer came forth to his task, and, filled with admiration of what I had heard, I rose and returned to my house.

PHILOSOPHICAL FACTS.

Sound travels at the rate of 1,141 feet per second in the air, 4,960 in water, 11,000 in cast iron, 17,000 in steel, 18,000 in glass, and from 4,636 to 17,000 in wood,

Mercury freezes at 38 degrees below zero of Fahrenheit, and becomes a solid mass, malleable under the hammer.

The greatest height at which the visible *clouds* ever exist does not exceed ten miles.

Air is about 816 times lighter than water.

The pressure of the atmosphere upon every square foot of the earth amounts to 2,160 lbs. An ordinary sized man, supposing his surface to be fourteen square feet, sustains the enormous pressure of 30,240 lbs.

Heat rarefies air to such an extent that it may be made to occupy 5 or 600 times the space it did before.

The violence of the expansion of *water*, when freezing, is sufficient to cleave a globe of copper of such thickness as to require a force of 28,900 lbs. to produce the same effect.

During the conversion of *ice* into water, 140 degrees of heat are absorbed.

Water, when converted into steam, increases in bulk 1,800 times.

One hundred pounds of the water of the Dead Sea contain 45 pounds of salt.

The mean annual depth of *rain* that falls at the equator is 96 inches.

Assuming the temperature of the interior of the earth to increase uniformly as we descend, at the

rate of one degree in 46 feet, at the depth of 60 miles it would amount to 480,000 degrees of Fahrenheit—a degree of heat sufficient to fuse all known substances.

The explosive force of closely confined *gunpowder* is six and a half tons to the square inch.

Hailstones sometimes fall with a velocity of 113 feet in a second—*rain* 34 feet in a second.

The greatest artificial *cold* ever produced is—91 degrees of Fahrenheit.

Electricity moves with greater velocity than light, which traverses 200,000 miles of space in a second of time.

Thunder can be heard at a distance of 30 miles.

Lightning can be seen, by reflection, at the distance of 200 miles.

Water.—Rain water contains more animal life than spring or well water. River water possesses different properties in different seasons of the year; hence the manufacturers of potash find it difficult in time of drought to melt potash. River, spring, and well water, are rain water. This is evidenced by the rivers, springs, and wells being dried up by great and long continued drought.

In the neighborhood of the Caspian Sea, in the environs of Gourief, the dew and the fogs are so impregnated with salt that the clothes worn by the inhabitants, and also the plants, have saline incrustations on their surfaces.

I have dissolved alkaline salts in water, and placed the solution in a glass bottle, filling the bottle about full. To this bottle I put a loose paper stopper, which would allow the escape of vapor. In ten years it corked itself perfectly tight with its own crystals.

In a glass retort I placed a quantity of brine; in a few months I found the edge of the retort coated with an incrustation of salt.

The steam from kettles in which alkaline fluids are evaporated, changes vegetable colors.

I see no difficulty in the fact that salt water produces salt vapor, and under a variety of circumstances.

The force used in sending up vapor, influences the quantity of salt which accompanies or is contained in it.

Linne, when suddenly slaked, throws many of its fine particles into the atmosphere, and so with grain ground into flour in a mill.

The atmosphere takes up the aroma of plants, vegetation, &c. Hence may be noticed, after a warm shower, a peculiar atmosphere in the vicinity of the poplar tree, and after a morning dew, in the vicinity of roses; these are not discovered by the sense of sight only, but by that of smell. So with water thrown on the surface of the streets, and into gutters, in hot weather; if only used in small quantities, it will carry up the putrid effluvia into the atmosphere, and greatly deteriorate that particular portion of it; but should a *shower* of rain come in contact, the water would take it up. I do not pretend to say that bad water cannot be purified by artificial distillation. I believe I have stated enough to satisfy your correspondent 'Croton,' and take leave to add that

as the water of the Croton has now reached the city, it is well that free use should be made of it. It should not be the object of the corporation to see how much money can be made by the sale of the water; this is not the business of municipal corporations, *nor should they fill up the wells*, to compel people to use Croton, but for the first year give the water at a low price.

EVOLUTION OF LIGHT IN THE HUMAN SUBJECT.

It was ten days previous to L. A.'s death, that I (Sir Henry Marsh) observed a very extraordinary light, which seemed darting about the face, and illuminating all around her head, flashing very much like an aurora borealis. She was in a deep decline, and had that day been seized with suffocation, which teased her much for an hour, and made her so nervous that she would not suffer me to leave her for a moment, that I might raise her up quickly in case of a return of this painful sensation. After she settled for the night, I lay down beside her, and it was then this luminous appearance suddenly commenced. Her maid was sitting up beside the bed, and I whispered to her to shade the light, as it would awaken Louisa. She told me the light was perfectly shaded. I then said, "What can this light be which is flashing on Miss Louisa's face?" The maid looked very mysterious, and informed me she had seen that light before, and it was from no candle. I then inquired when she had perceived it; she said that morning, and it dazzled her eyes, but she had said nothing about it, as ladies always considered servants superstitious. However, after watching it myself half an hour, I got up, and saw that the candle was in a position from which this peculiar light could not have come, nor indeed was it like that sort of light; it was more silvery, like the reflection of moonlight on water. I watched it more than an hour, when it disappeared. It gave the face the look of being painted white and highly glazed, but it danced about, and had a very extraordinary effect. Three nights after, the maid being ill, I sat up all night, and again I saw this luminous appearance, when there was no candle, nor moon, nor, in fact, any visible means of producing it. Her sister came into the room and saw it also. The evening before L. A. died, I saw the light again, but it was fainter, and lasted but about twenty minutes. The state of the body of the patient was that of extreme exhaustion. For two months she had never sat up in bed. Many of her symptoms varied much from those of other sufferers in pulmonary complaints whom I had seen, but the general outline was the same. Her breath had a very peculiar smell, which made me suppose there might be some decomposition going forward. The young lady about whose person these luminous appearances were manifested I had seen several times before her return to the country; her lungs were extensively diseased; she labored under the most hopeless form of pulmonary consumption.—*London Medical Gazette*.



BURNS AND HIS LOCALITIES.—At top, Statue of Burns, by Flaxman, from the Monument at Edinburgh.—On the left, 1, Dumfries, 2 The Twa Brigs of Ayr; 3, Burns' Mausoleum at Dumfries.—On the right, 1, Banks o' Doon; 2, Room in the Cottage at Maybole.

LOCAL MEMORIES OF GREAT MEN.

BURNS.

IN one of the letters of the great "national poet" of Scotland, as Henry Mackenzie, with a bold and far-sighted prescience, called Burns on the first publication of his poems, the latter writes: "I am hurt to see the other towns, rivers, woods, haughs, &c. of Scotland immortalized in song, while my dear native country, the ancient baileries of Carrick, Kyle, and

Cunningham, famous, both in ancient and modern times, for a gallant and warlike race of inhabitants—a country where civil and particularly religious liberty have ever found their first support and their last asylum—a country the birth place of many famous philosophers, soldiers, and statesmen, and the scene of many important events recorded in history, particularly a great many of the actions of the glorious Wallace—yet we have never had one Scotch poet of any eminence to make the fertile banks of Irvine, the romantic woodlands and sequestered scenes on Ayr, and the

heathy mountainous source and winding sweep of the Doon, emulate the Tay, Forth, Ettrick, and Tweed. This is a complaint I would gladly remedy; but alas! I am far unequal to the task, both in genius and education." The date of this letter is 1785, the year preceding that in which the first edition of his poems was published, and when consequently he wanted that full confidence in his own powers which the favorable opinion of the world only can give. Yet how short a time elapsed before he did remedy the neglect of which he complained!—before he invested the Irvine, the Ayr, and the Doon with charms more attractive than their own surpassing beauty, more permanent perhaps than even their own existence. Little could the poet think, even in his most dazzling visions, that the mere fact of his residence in that district, for whose scenery and recollections he was so solicitous, should give to it a new and more universally interesting character; that the memory of its "famous philosophers, soldiers, and statesmen" should all be absorbed in the memory of the ploughman-poet; that, in short, the peasants of his native land, with no unnatural exultation at the glory that had gone forth from among them, should cease to point out the scene of this great action, or of that illustrious man's home, but sum up all in the emphatic declaration, "This is the Land of Burns."

In tracing the course of the poet's movements through the localities thus happily designated, we commence with the clay-built cottage on the banks of the Doon, built by his father's own hands. Here Robert Burns was born, on the 25th of January, 1759. The "clay bigging," as it was called by the country people, stood about two miles from Ayr, on the road to Maybole, and but a short distance from the "Auld brig o' Doon," and from Alloway Kirk, the scene of the unearthly midnight revels in 'Tam o' Shanter.' Burns was accustomed, in his after-life, to allude to the circumstance attending his birth,—the season was rough; and within a few days a part of the cottage was blown down, and himself and mother removed for shelter to a neighbor's house—and ironically claim pity for the stormy passions of one thus tempestuously ushered into life. The cottage consisted of but two apartments, one used as a kitchen and sitting-room, the other as a kind of parlor called in Scotland a 'spence;' in a recess of the former stood the bed in which the poet was born. William Burness, the father, was, as is well known, subject to great pecuniary troubles, almost from the period of his marriage to that of his death. A circumstance of this nature caused him to sell the lease of the ground he cultivated, and of the clay bigging, to the corporation of shoemakers in Ayr. The latter is now occupied as an alehouse, which, as we may well suppose, is in no want of visitors. An album is kept by the host, in which strangers are desired to enter their names: these, in the month of December, 1838, amounted to three hundred and fifty! We must not omit to notice that opposite the alehouse is a thatched cottage scarcely less interesting, for in it lived Murdoch, Burns's kind and enthusiastic instructor. Lochlea was the family's next residence, and for the first four years prospects looked brighter, but after that period there

appears to have been almost a continual decline. To make matters worse, disputes broke out between William Burness and his landlord, which still further enhanced the anxieties amid which the poet spent his earlier years. Of the character and attainments of the latter at this time we have the best of evidence—his own. "At seven years of age," he says, "I was by no means a favorite with anybody. I was a good deal noted for retentive memory, a stubborn, sturdy something in my disposition, and an enthusiastic idiot piety; I say idiot piety, because I was then but a child. Though it cost the schoolmaster some thrashings, I made an excellent English scholar; and by the time I was ten or eleven years of age I was a critic in substantives, verbs, and particles. The earliest composition that I recollect taking pleasure in was 'The Vision of Mirza,' and a hymn of Addison's, beginning—

'How are thy servants blest, O Lord!'

The "schoolmaster" was not the poet's only instructor; he learned much from his own father, who, like the generality of Scottish peasants, possessed no inconsiderable amount of knowledge. In imparting this to his children the elder Burns spent his evenings. Books also lent their aid. The family library contained, among other works, some plays of Shakspeare, the "Heathen Pantheon," Locke's "Essay on the Human Understanding," Allan Ramsay's and Young's poems, and "Hervey's Meditations." Yet to an humbler source than any of these must we look for the incidents which had the largest share in developing the poet's mind. "In my infant and boyish days," he writes to Dr. Moore, another of his early literary patrons, "I owed much to an old woman who resided in the family (Jenney Wilson by name), remarkable for her ignorance, credulity, and superstition; she had, I suppose, the largest collection in the country of tales and songs concerning devils, ghosts, fairies, brownies, witches, warlocks, spunkies, kelpies, elf-candles, dead-lights, wraiths, apparitions, cantraps, giants, enchanted towers, dragons, and other trumpery. This cultivated the latent seeds of poesie; but had so strong an effect on my imagination, that to this hour, in my nocturnal rambles, I sometimes keep a look-out in suspicious places." Besides the books we have mentioned Burns possessed a collection of songs, which were to him the greatest of all his literary treasures. This, he says, "was my *vade-mecum*. I pored over them, driving my cart or walking to labor, song by song, verse by verse, carefully noting the true, tender, or sublime, from affectation and fustian." And under what circumstances were these studies pursued? "The cheerless gloom of a hermit," says the poet, "with the unceasing moil of a galley slave, brought me to my sixteenth year!" His brother Gilbert, with a touching simplicity, enters more in detail into the history of the family distresses. "We lived very sparing. For several years butcher's-meat was a stranger in the house, while all the members of the family exerted themselves to the utmost of their strength, and rather beyond it, in the labors of the farm. My brother, at the age of thirteen, assisted in threshing the crop of corn, and at fifteen was the

principal laborer on the farm; for we had no hired servant, male or female. The anguish of mind we felt at our tender years under these straits and difficulties was very great. 'To think of our father growing old—for he was now above fifty, broken down with the long-continued fatigues of his life, with a wife and five other children, and in a declining state of circumstances!—these reflections produced in my brother's mind and mine sensations of the deepest distress. . . . I doubt not but the hard labor and sorrow of this period of his life was in a great measure the cause of that depression of spirits with which Robert was so often afflicted through his whole life afterwards.' A new expedient was now tried on the farm of Lochlea; as corn was unprofitable, flax was cultivated, and the poet was sent to Irvine, in 1781, to learn the art of flax-dressing, in order that he should manufacture the home-produce for market. 'This was exchanging a toil which he liked (in moderation), for one which, by contrast, could not but disgust him. His spirits and his health alike gave way, and he expressed himself in his letters at the time as transported at the thought of so soon bidding an adieu to all the pains, and uneasinesses, and disquietudes of this weary life. In 1784 his father died, just in time to be saved from the horrors of a jail.

We now follow the bereaved family to the farm of Mossgiel, a place doubly dear to the lovers of poetry as that in which Burns wrote the best of his early pieces, and as having been described by Wordsworth in a very exquisite sonnet, which we transcribe;—

" 'There,' said a stripling, pointing with much pride,
Toward a low roof, with green trees half-concealed,
'Is Mossgiel farm; and that's the very field
Where Burns plough'd up the daisy.' Far and wide
A plain below stretch'd seaward, while, descried
Above sea-clouds, the peaks of Arran rose;
And, by that simple notice, the repose
Of earth, sky, sea, and air, was vivified.
Beneath the random field of clod or stone,
Myriads of daisies have shone forth in flower
Near the lark's nest, and in their natural hour
Have passed away; less happy than the one
That by the unwilling ploughshare died to prove
The tender charm of poetry and love."

Mossgiel was taken by the poet and his brother some months before their father's death, when his affairs appeared to be on the verge of bankruptcy; and it was stocked by the individual savings of the family. The farm, according to Gilbert Burns, "was a joint concern. Every member of the family was allowed ordinary wages for the labor he performed on the farm. My brother's allowance and mine was £7 per annum each. And during the whole time this family concern lasted, which was four years, as during the preceding period at Lochlea, his expenses never in any year exceeded his slender income." But the most pinching economy was once more found an insufficient remedy for a badly chosen soil and situation.

"Mossgiel," says Gilbert, "lies very high, and mostly in a cold wet bottom. The first four years that we were in the farm were very frosty, and the spring was very late. Our crops in consequence were very unprofitable: and notwithstanding our utmost diligence and economy, we found ourselves

obliged to give up our bargain, with the loss of a considerable portion of our original stock." But during the period here referred to, matters of high moment had occurred, calculated to make even failures so distressing as this appear insignificant, from the brilliancy of the new prospects that opened to the gaze of one of the brothers. By the close of the year 1786, Robert Burns had added a new name to the illustrious roll of the great poets of Britain. Love, which throughout Burns's life continued an unfailing source of inspiration, also first impelled him to write. "You know," he observes in a communication to Dr. Moore, "our country custom of coupling a man and woman together as partners in the labors of harvest. In my fifteenth autumn, my partner was a bewitching creature, a year younger than myself. My scarcity of English denies me the power of doing her justice in that language; but you know the Scottish idiom, 'She was a bonnie sweet sonesie lass.' . . . Among her other love-inspiring qualities, she sang sweetly; and it was her favorite reel to which I attempted giving an imbodied vehicle in rhyme. . . . Thus with me began love and poetry." The verses written on this occasion, like those of Lord Byron, and perhaps of every other great poet's real first attempt, contained little or no indication of his genius. The difficulty of rhyme naturally first engages the attention of the poetical aspirant, and directs him to the works of the writers whom he most admires, for example and instruction; and it is only when this difficulty is mastered, that he begins to take practically to heart the conviction that the verse he has been studying is of little or no value except for the originality of the thoughts it may bear. With every fresh attempt, however, came increased power; and during the poet's residence at Mossgiel, 'My Nanny, O,' 'Green grow the Rashies,' 'Poor Mailie,' his satirical attacks on the 'New Light faction' of the Calvinists, the 'Holy Fair,' the 'Address to the De'il,' the wonderful dramatic extravaganza of the 'Jolly Beggars,' the 'Cotter's Saturday Night,' &c., in short, all the pieces that appeared in his first publication, were composed. For this, like most of the other principal epochs in Burns's career, we have his own history. "I weighed," he says in a letter to Dr. Moore, "my productions as impartially as was in my power. I thought they had merit; and it was a delicious idea that I should be called a clever fellow, even though it should never reach my ears—a poor negro-driver, or perhaps a victim to that inhospitable clime (Jamaica), and gone to the world of spirits. To know myself, had been all along my constant study. I weighed myself alone, I balanced myself with others, I watched every means of information, to see how much ground I occupied as a man and a poet: I studied assiduously Nature's design in my formation, where the lights and shades in character were intended. I was pretty confident my poems would meet with some applause; but, at the worst, the roar of the Atlantic would deafen the voice of censure, and the novelty of West Indian scenes make me forget neglect. I threw off six hundred copies, having got subscriptions for about three hundred and fifty." The foreign voyage, to

which he refers so frequently in this letter, was projected in consequence of an event which at first caused Burns much misery, his connexion with Jean Armour, afterwards Mrs. Burns. The promised birth of a child first revealed the matter to the maiden's father, who, instead of being pacified by the production of the "marriage lines," as a private acknowledgment of marriage is called in Scotland when the sanction of the Kirk has not been obtained, tore the paper from her hands, and throwing it into the fire, commanded her no longer to think of Burns as her husband. She trembled and obeyed, to the great anguish and not unnatural indignation of the poet. He determined, in consequence, to go out to the West Indies, and there push his fortune; and for the requisite means, he looked to the profits of his publication. And never was poet's first venture attended with more sudden or better deserved, and, therefore, more permanent success. "It is hardly possible," says Heron, one of his biographers, "to express with what eager admiration and delight the poems were everywhere received." The edition soon disappeared, and Burns proposed a second to his printer, "Wee Johnnie;" but the latter demurring, Burns was so incensed at his unreasonableness, that he even refused to allow some of his friends to secure the printer against the loss he so much dreaded. The profits of this publication were not very remarkable, twenty pounds being the sum total of the poet's receipts. In other matters also, he saw that as yet, at least, his reputation brought no tangible result with it. He might dine as often as he pleased with the rich and the powerful, but not the less did he find it necessary to return at midnight to his blanket and straw, which, says Allan Cunningham, "happened often to Burns." So he procured the situation of overseer on an estate in Jamaica, and prepared for his departure from Mossiel and the loved country of his birth.

Burns had bid farewell to his friends; his chest was already on its way to Greenock, and he himself was about to follow, when a most kindly and encouraging letter from Dr. Blacklock, whom Mr. Cunningham calls "a middling poet, but a most worthy man," at once changed his determination. The Doctor said therein, it was "much to be wished, for the sake of the young man, that a second edition, more numerous than the former, should immediately be printed;" and Burns was but too happy to listen to the recommendation. It "fired me so much," says the latter, "that away I posted to Edinburgh without a single acquaintance or a single letter of introduction." In the Scottish metropolis, however, he did not long remain unnoticed. The historian Robertson, Dugald Stewart, and Henry Mackenzie were foremost in acknowledging the claims of the "inspired ploughman" to a lofty rank among the poets of their common country; and they, and the brilliant circles of rank and fashion among which Burns was soon continually found, were astonished at his self-possession and extraordinary conversational powers. "The attentions which he received," says Dugald Stewart, "during his stay in town, from all ranks and descriptions of persons, were such as would have

turned any head but his own. I cannot say that I could perceive any unfavorable effect which they left upon his mind. . . . Among the poets whom I have happened to know, I have been struck in more than one instance with the unaccountable disparity between their general talent and the occasional inspirations of their more favored moments. But all the faculties of Burns's mind were, as far as I could judge, equally vigorous, and his predilections for poetry were rather the result of his own enthusiastic and impassioned temper, than of a genius exclusively adapted to that species of composition. From his conversation I should have pronounced him to be fitted to excel in whatever walk of ambition he had chosen to exert his abilities." Under the patronage of the Earl of Glencairn and the eminent men we have mentioned, appeared the second edition of Burns's poems. This was towards the close of the year 1786; and before the cry of the cuckoo was heard, to use Burns's own expression, in the following year, not less than two thousand eight hundred and odd copies had been subscribed for by little more than fifteen hundred subscribers. All things smiled upon the joyous bard. Not that he was at all unaware of the precarious character of one of the consequences of his reputation, the countenance and patronage of the great and powerful. "I have formed many intimacies and friendships," he writes, in a letter to Dr. Moore, "but I am afraid they are all of a too tender construction to bear carriage a hundred and fifty miles;" and in the very dedication of his poems to the noblemen and gentlemen of the Caledonian Hunt, he remarks, "the poetic genius of my country found me, as the prophetic bard Elijah did Elisha—at the plough;" and seems to anticipate that it will so leave him, in its concluding sentences: "Nor do I present this address with the venal soul of a servile author looking for a continuation of these favors; I was bred to the plough, and am independent." The profits of the publication amounted to nearly five hundred pounds. After a residence of little more than five months in Edinburgh, he quitted that city to make a tour through the border counties. Many characteristic passages marked this journey. On crossing the Tweed at Coldstream, "as soon as he had reached the English side, he took off his hat, knelt down, and with extreme emotion, and a countenance rapt and inspired, prayed for and blessed Scotland, by pronouncing aloud the two concluding verses of 'The Cotter's Saturday Night.'"

In his course up the Teviot and the Jed, he called on an old gentleman, who showed him an arm-chair that had belonged to the poet Thomson. Burns exhibited the veneration that men of true genius generally have for each other, by reverently examining the relic, and almost refusing to sit down in it. He had, we may observe by the way, previously displayed similar feelings at Edinburgh, where one of his earliest cares was to find out the localities that had long been sacred to the poet's heart—the grave of Ferguson—where he knelt down and kissed the sod, and the house of Allan Ramsay. On the 13th of May he spent an hour among the ruins of Dryburgh, and passed over some broken ground in the

neighborhood, where his mare could scarcely keep her feet, unconscious that on the one spot would rise the magnificent home (Abbotsford), and that in the other would rest the honored remains, of a man whose reputation would even exceed his own, yet was the poet the very earliest to prophesy the future reputation of the great romancist.

Burns returned to Mossgiel in 1787. His mother meeting him at the door, with tears in her eyes, and a world of pride, joy, and affection in her heart, that could find vent only in the simple but touching words—"Oh, Robert!" The next few months were spent in similar wanderings, and in visits to Edinburgh, where already he found his titled friends look coldly on him. He grew restless and dissatisfied. But in 1778 he married Jean Armour, advanced two hundred pounds to his brother Gilbert, and with the remainder of his pecuniary possessions stocked the farm of Ellisland in Dumfriesshire, and immediately busied himself in the duties of his new engagement, and in those of the Excise-office, to which he now belonged. He obtained his appointment as an exciseman principally through Grahame of Fintray, a friend whom he has made memorable by his poems. "I have chosen this, my dear, dear friend," writes Burns to Margaret Chalmers, "after mature deliberation. The question is not at what door of fortune's palace shall we enter in, but what doors does she open for us. I was not likely to get anything to do. I got this without any hanging on or mortifying solicitation; it is immediate bread, and though poor in comparison of the last eighteen months of my existence, 'tis luxury in comparison of all my preceding life." We must add on this matter one or two observations by Mr. Cunningham. He says, "Gauger is a word of mean sound, nor is the calling a popular one; yet the situation is neither so humble nor the emoluments so trifling as some of the poet's southern admirers have supposed. A gauger's income in those days on the banks of the Nith was equal to three hundred a year at present in London; an excise-officer is the companion of gentlemen; he is usually a well-informed person, and altogether fifty per cent. above the ordinary excise-officers on the banks of the Thames."

Ellisland consisted of a beautifully situated, but unenclosed and unimproved piece of ground, measuring somewhat more than a hundred acres. A dwelling-house, and the various farm-buildings required, had to be built. The 'onstead,' to which he conducted his wife, as soon as it was prepared for her reception, shows the poetical taste which had presided over the arrangements. Through the centre of a fine alluvial plain skirted by mountains of considerable elevation, the Nith, a broad and copious stream, pursues its way to the Solway. The right or west bank here rises in a gravelly precipice about forty feet above the stream, while the opposite bank consists of a low hollow or meadow, out of which, about a mile from Ellisland, rise the towers of Dalswinton. Burns's farm-buildings were situated near the verge of the precipice or scaur alluded to, in such a way that, as Mr. Cunningham remarks, their afternoon shadow fell across the river upon the op-

posite fields. The house was small, containing only an ample kitchen, which was to serve also as the dining-room, a bed-room to hold two beds, a closet to hold one, and a garret for the female servants. The garden was a little way from the house; along the river side ran a pretty footpath southward, another leading northward afforded fine views of the Nith, while half way down the steep declivity was a spring of beautiful water for the supply of the household. Some of the panes yet exhibit Burns's love of scribbling upon such frail tablets. On one we read Pope's noble line, "An honest man's the noblest work of God." At Ellisland were written some of the best of his songs, the exquisitely pathetic verses to 'Mary in Heaven,' 'Tam O'Shanter,' &c. &c. It was in the stack-yard to the left of the house that Mrs. Burns followed her husband one evening during harvest, noticing that he was in a melancholy or unhappy mood. She found him walking backward and forward, gazing on the starry sky. As he had been unwell, she entreated him to come into the house, and he promised compliance. A second time she went to him, found him in the same place, and again he promised obedience to her wishes. Still remaining absent, she went to him a third time, and found him "stretched on a mass of straw, with his eyes fixed on a beautiful planet, 'that shone like another moon.'" He now yielded to her request, and immediately wrote out the verses commencing—

"Thou lingering star, with lessening ray,
That loves to greet the early morn,
Again thou usherest in the day
My Mary from my soul was torn.
O Mary! dear departed shade!
Where is thy place of blissful rest?
Seest thou thy lover lowly laid?
Hear'st thou the groans that rend his breast?"

The circumstances under which 'Tam O'Shanter' was produced were of a very different character. The name, we may premise, was taken from the farm of Shanter in Kyle; the rude germs of the story from tradition. Mrs. Burns relates that observing Robert walking with long swinging sort of strides, and apparently muttering as he went, she let him alone for some time; at length she took the children with her and went forth to meet him. He seemed not to observe her, but continued his walk: "On this," says she, "I stepped aside with the barns among the broom—and past us he came, his brow flushed, and his eyes shining; he was reciting these lines—

"Now—Tam! O Tam! had thae been queans
A' plump and strapping in their teens,
Their sarks, instead of creeshie flannan,
Been snaw-white seventeen hunder linen!
Thir breeks o' mine, my only pair,
That ance were plush, o' gude blue hair
I wad hae gien them off my hurdies!
For a'e blink o' the bonnie burdies!"

"I wish ye had but seen him! he was in such ecstasy that the tears were happing down his cheeks." Had Ellisland been successful, there seems every reason to suppose that the poet would have been happy, perhaps long lived, and the author of writings even of a still higher class than any he has left us.

That he meditated such things we know, but unfortunately the repose necessary for their accomplishment was denied to him. Ellisland, instead of succeeding, swept away all the money the poet had reserved to himself from the profits of his poems, and in 1791, after a sale of his stock and part of his furniture, he removed to Dumfries, where he had obtained a better Excise appointment.

At Dumfries Burns took a house near the lower end of the Bank-Vennel, and dismissing all further ideas of farming, trusted entirely to the Excise Board for the means of living. And there were situations in its gift which would have left Burns a happy and contented man for life. They were not for him, however. A charge was made against him by some malicious busybody, and the Board, instead of treating it with the contempt it deserved, set on foot a regular inquisition into Burns's political tenets and conduct; and this in connexion with a man whose independence formed the most striking trait of his moral character! Burns thus describes his feelings and thoughts at this most unhappy epoch in his history. He is writing to his friend Grahame of Fintray; the date is December, 1792:—"I have been surprised, confounded, and distracted, by Mr. Mitchell, the collector, telling me that he has received an order from your Board to inquire into my political conduct, and blaming me as a person disaffected to government. Sir, you are a husband and a father. You know what you would feel to see the much loved wife of your bosom and your helpless prattling little ones turned adrift into the world, degraded, and disgraced, from a situation in which they had been respectable and respected. I would not tell a deliberate falsehood, no, not though even worse horrors, if worse can be than these I have mentioned, hung over my head; and I say that the allegation, whatever villain has made it, is a lie! To the British constitution, on Revolution principles, next after my God, I am most devoutly attached." Enclosed with this letter was another to be laid before the Board, disclaiming all idea of setting up a republic, and expressing his adherence to the constitutional principles of the Revolution of 1688. He, however, owned at the same time, with a manly courage, that he felt corruptions had crept in, which every patriotic Briton desired to see amended.

"This last remark," says the poet, "gave great offence; and one of our supervisors-general, a Mr. Corbet, was instructed to inquire on the spot, and to document me,—that my business was to act, not to think; and that whatever might be men or measures, it was for me to be silent and obedient." Rightly did a nobleman of the very administration under which such things were done, remark upon the poet's judges, "they are as absurd as they are cruel." Burns was "partly forgiven," but from henceforward all his hopes of advancement were blasted. And consequently, from that time may, we think, be dated that downward course which most of his biographers state him to have taken from the period of his residence in Dumfries, but which we think has been much exaggerated by some of them. Findlater, a brother officer, says he was "exemplary" in his at-

tention to his duties, until disease and accumulated infirmities came upon him; and that, whilst seeing more of him than any other person, he "never beheld anything like the gross enormities" with which he was charged after his death.

At midsummer, 1794, Burns removed from the Bank-Vennel to Milehole-brae, since called Burns-street, where he leased a plain and humble, but commodious house. The street stands near the bleaching or parade ground on the river side, a favorite walk of the citizens of Dumfries. Here he was often seen, within the open door, reading among his children, with his wife moving about, arranging matters connected with the details of her household. Darker and darker grew the scene as death approached. An excruciating rheumatism reduced him to a deplorable state. The Excise then only allowed him half-pay, as was customary; and when he petitioned the Board, saying, "if they do not grant it, I must make my account with an exit truly *en poëte*; if I die not of disease, I must perish with hunger,"—it was still refused. Many of his happiest songs had been written as contributions to Thomson's 'Collection of Original Scottish Airs;' and at an early period of the acquaintance of the two men, Burns had almost quarrelled with his friend for sending him five pounds, remarking, that in the honest enthusiasm with which he engaged in the work, it would be prostitution of soul to talk of money, fee, &c. He was now, however, obliged to write in a different strain. On the 12th of July Thomson received from him a letter, in which he said: "After all my boasted independence, cursed necessity compels me to implore you for five pounds. A cruel haberdasher, to whom I owe an account, taking it into his head *that I am dying*, has commenced a process, and will infallibly put me in jail. Do, for God's sake, send me that sum, and that by return of post. Forgive me this earnestness; but the horrors of a jail have made me half distracted. I do not ask all this gratuitously, for upon returning health I hereby promise and engage to furnish you with five pounds' worth of the neatest song genius you have seen." Of course he received the money he desired, but no health returned to enable the high-spirited man to keep this voluntary pledge. Seabathing in the Solway relieved for a time the pains in the limbs, but his appetite failed, and melancholy preyed on his spirits. He grew feverish on the 14th of July (1796), and desired to be conducted home. He returned on the 18th, and the news soon spread through the town that he was dying. "Who do you think will be our poet now?" inquired with much simplicity one of the numerous persons congregated in knots about the street. His wit and good humor broke out in some of his last recorded sayings. 'To Gibson, a brother volunteer, who sat by the bedside in tears, he said, smiling, "John, don't let the awkward squad fire over me." As to Burns woman owed much for the thousand charming things he had said and sung of them; to woman was he in return indebted, during the last few days of his life, for an alleviation of his pains and anxieties. With all the poet's admirers, let the name of Jéssy Lewars be

held in affectionate esteem and honor; she it was who, when Mrs. Burns was in hourly expectation of her confinement, and the poet's children, in their youth and helplessness, required, instead of being able to render, sympathy and support, "acted with the prudence of a sister and the tenderness of a daughter; and kept desolation away, though she could not keep disease." It was on the fourth day after his return, that as his attendant held a cordial to his lips, the poet swallowed it eagerly, rose almost erect in the bed, extended his hands, sprang forward nearly the whole length, and died. He was but in his thirty-seventh year. He was buried with the military honors he had deprecated on the 25th, Mrs. Burns giving birth almost at the same hour to a son, who lived but a short time. The old kirkyard of Dumfries was the poet's burial-place. On the 5th of June, 1815, the grave was opened to remove the body to a more commodious part. The coffin was partly destroyed, but the dark and curling locks looked as fresh and glossy as ever. A 'showy' mausoleum, with a *Latin* inscription, now marks out, to the pilgrims who daily visit the place, the object of their search.

The following brief summary of his poetical characteristics, is from the pen of Mr. Thomas Carlyle, which describes them, we think, very happily. "The excellence of Burns is indeed of the rarest, whether in poetry or prose; but at the same time it is plain and easily recognised—his sincerity—his indisputable air of truth. Here are no fabulous woes or joys; no hollow fantastic sentimentalities; no wire-drawn refinings either in thought or feeling; the passion that is traced before us has glowed in a living heart; the opinion he utters has risen in his own understanding, and been a light to his own steps. He does not write from hearsay, but from sight and experience; it is the scenes he has lived and labored amidst that he describes; those scenes, rude and humble as they are, have kindled beautiful emotions in his soul, noble thoughts, and definite resolves; and he speaks forth what is in him, not from any outward call of vanity or interest, but because his heart is too full to be silent. He speaks it too with such melody and modulation as he can—in homely rustic jingle—but it is his own, and genuine. This is the grand secret for finding readers, and retaining them: let him who would move and convince others, be first moved and convinced himself."

GOD EVERYWHERE.

THE Deity intended we should see him everywhere. He is in all places, at all times. All is not God—but God is in all. He holds the central suns, and rolls around the ponderous planets. Seasons come and go as he directs;—God speaks; the north winds retire, and the zephyrs come; genial rays unlock the earth's long bound bosom; the fettered streams break loose their bonds; the bird returns from its winter retreat, the wild beast comes out of his den; man goes forth to his toil, the air is filled

with notes of praise, and heaven seems descending to the earth.

It is God that awakens into life, at the return of each Spring, myriads of happy songsters; he sets in tune numberless voices of the musical tribes, from the cricket that chirps under the window, to the chief bird singer that fills the air with her melodious strains.

Under the watchful eye and ceaseless care of the Almighty, are reared the plants of Summer. He imparts to the pink its fragrance—paints the colors of the rose, gives fingers to the vine, and spreads a beautiful carpet over the face of the earth.

In Autumn God ripens the apple, mellowes the pear, and gives flavor to the peach.

God speaks in the cold of Winter. Every chilling blast of wind admonishes the living that the cold night of death and the winter of the grave are near. The sifting snows suggest the winding sheet;—the shut up way points to the end of life. God commands the morning, and causes the day-spring to know its place; he sends forth the leading star, and flushes the sky with the presages of the king of day ere he comes "rejoicing in the east." His are

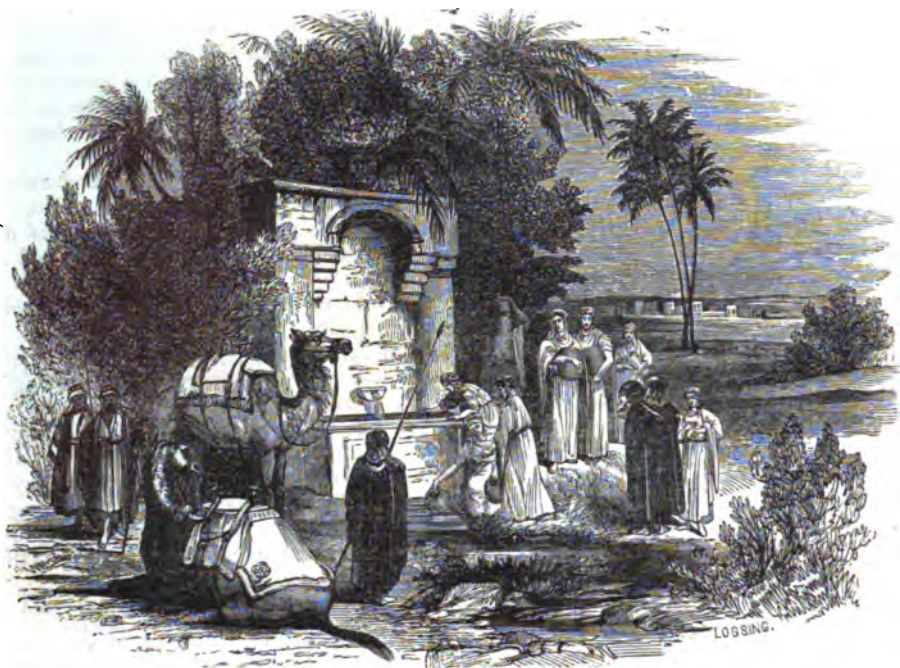
"The clouds that seem like chariots of saints
By fiery coursers drawn, as brightly hued
As if the glorious, bushy, golden locks
Of thousand cherubim had been shorn off,
And on the temples hung of morn and eve."

His too are the colors that change and sport around the place where Phœbus retires, having run his race. By God are the heavens spread out as a curtain, by him are they garnished with beauty. He marshals every star—binds the sweet influences of Pleiades, and looseth the bands of Orion—bringeth forth Mazaroth in his season, and guides Arcturus with his sons.

God rides upon the wings of the wind; presides in the tempest—speeds the thunder on—hurls the lightning, forms the drops of rain, and pours them down in refreshing showers, or congeals them and beats the earth with hail-stones.

He speaks, and dark'ning clouds ascend the sky,
The heavens in night are veiled: fierce lightnings dart
In fearful mode, and pealing thunders roll.
Touched mountains smoke: old ocean roars, and waves
In angry surges rise—earth rocks and shakes,
To centre shakes; forests fall, hamlets large
In ruin lie. Beneath, above, around,
Appear the harbingers of greater wrath,
Dismay and consternation seize on all,
Again God speaks; dense darkness flies apace,
The lightnings cease, the thunders die, the sky
Returns, the sea is calmed, the earth is stilled,
Man's fears depart, and all is peace.

MARINE ANIMALS.—The Rev. W. Scoresby remarked, during a run of fifty leagues, that the sea was constantly of an olive green color, remarkably turbid, which afterwards appeared changed to transparent blue. This green appearance of the sea in these latitudes was occasioned by myriads of small marine animals. A calculation of the number of these animals, in a space of two miles square, and 250 fathoms deep, gave an amount of 23,888,000,000,000.



Well, with Camels, at Cana in Galilee.

GREAT VALUE OF WATER IN HOT CLIMATES.

IN some parts of the East, considerable pains and expense have been bestowed on inventions to supply travellers with water, and these are always considered as works of peculiar benevolence. It is remarkable, that it is mentioned of the Hindoos in some parts of India, that they sometimes go a considerable distance to fetch water, and bring it to the roadside, where travellers are likely to pass, and offer it to them, in honor of the gods. Fountains are common in the East. Their number is owing to the nature of the country and the climate.

The soil, parched and thirsty, demands moisture to aid vegetation; and a cloudless sun, which inflames the air, requires for the people the verdure, shade, and coolness, its agreeable attendants; hence they occur not only in the towns and villages, but in the fields and gardens, and by the sides of the roads, and by the beaten tracks on the mountains. Many of them are the useful donations of humane persons while living, or have been bequeathed as legacies on their decease. The Turks esteem the erecting of them as meritorious, and seldom go away after performing their ablutions, or drinking, without gratefully blessing the name and memory of the founder.

The method used by the ancients for obtaining the necessary supplies still prevails: this is done by pipes or paved channels. When arrived at the destined spot, it is received by a cistern with a vent, and the waste current passes below from another cistern, often an open sarcophagus. It is common

to find a cup of tin or iron hanging near by a chain, or a wooden scoop with a handle placed in a niche in the wall.

The front is of stone or marble, and in some painted and decorated with gilding, and with an inscription in Turkish characters in relieve. The blessing of the name and memory of the builder of one of these fountains, shows that a cup of water is in these countries by no means a despicable thing. Niebuhr tells us, that among the public buildings of Kahira, those houses ought to be reckoned where they daily give water *gratis* to all passengers that desire it. Some of these houses make a very handsome appearance, and those whose business it is to wait on passengers, are to have some vessels of copper curiously tinned, and filled with water, always ready on the window next the street. Hall, in his "Peru," gives the following account of the value of water at Payta: "Being nearly choked with dust, I began the conversation by begging a glass of water; upon which one of the matrons pulled a key from her pocket, and gave it to a young lady, who carried it to a corner of the room, where a large jar was placed, and unlocking the metal lid, measured out a small tumbler-full of water for me; after which she secured the jar, and returned the key to her mother. 'This extraordinary economy of water arose, as they told us, from there not being a drop to be got nearer than three or four leagues off; and as the supply, even at this distance, was precarious, water at Payta was not only a necessary of life, but, as in a ship on a long voyage, was considered a luxury.' The following quotation from Carne's "*Letters from the East*," will



Giving Water to a thirsty Traveller.

show the value of water in these climes : " Fatigued with heat and thirst, we came to a few cottages in a palm wood, and stopped to drink of a fountain of delicious water. In our northern climate, no idea can be formed of the exquisite luxury of drinking in Egypt : little appetite for food is felt ; but when, after crossing the burning sands, you reach the rich line of woods on the brink of the Nile, and pluck the fresh limes, and mixing their juice with Egyptian sugar and the soft river-water, drink repeated bowls of lemonade, you feel that every other pleasure of the senses must yield to this. One then perceives the beauty and force of those similes in Scripture, where the sweetest emotions of the heart are compared to the assuaging of thirst in a sultry land."

On our Saviour's words, " Whosoever shall give you a cup of water to drink in my name, because ye belong to Christ, verily I say unto you, he shall not lose his reward," Harmer justly remarks : " The general meaning is plain to every reader ; that no service performed to a disciple of Christ, out of love to his Master, though comparatively small, should pass away unrewarded : but those in more temperate climates are sometimes apt to imagine that the instance our Lord mentions is of so very trifling a nature, that it appears almost ludicrous. It certainly would not appear so to an inhabitant of the East, to whom our Lord made that declaration : a cup of cold water is to them a refreshment not unworthy of acceptance." To this Dr. Clarke adds a further illustration—that it appears from the most authentic information, the Hindoos sometimes go a great distance to fetch water, and then boil it, that it may not be hurtful to travellers who are hot ; after this they stand from morning to night in some great road, where there is neither pit nor rivulet, and offer it *in honor of their gods*, to be drunk by the passengers.

This necessary work of charity in those countries seems to have been practised among the more humane and pious Jews ; and our Lord assures them, that if they do this in *his name*, they shall not lose

their reward. This one circumstance of the Hindoos offering the water to the fatigued passengers *in honor of their gods*, is an excellent illustration of the words of our Saviour.

POPULAR ERRORS.—The human body, in our climate, is always much warmer than the atmosphere, and is constantly throwing off heat. All substances, in respect of heat, are called good or bad conductors. If we apply our hand to the carpet, it will appear tolerably warm, because it is a bad conductor, and takes no heat from us. If we next touch the floor, which is of wood, and therefore, although a bad one, a better conductor than the carpet, it will appear somewhat cold—as it takes some of the heat of our hand away. Iron, and all metals, being eminently good conductors, will abstract a greater quantity of heat from us, so that when we come to touch that, it will appear very cold from the loss of heat which our body immediately experiences. The same fallacious testimony of the touch would induce us to believe that water is really much colder than it is. When we take the cold bath, we experience a chilly sensation in passing out of the atmosphere into the water, although a thermometer will tell us that both are of the same temperature ; this is because it has a property peculiar to itself, by which it absorbs and carries away whatever heat may be brought in contact with it, and which is equivalent in its results to the property of a conductor. Thus it will appear that what seems to be a cold sensation received from other objects, is, in reality, nothing more than the loss of heat in touching them ; and thus it is evident that the Author of the Universe formed our senses to answer the ordinary purpose of life, and gave us intellect to correct their errors, and enable us to apply them to higher and nobler purposes of science.

Dr. Lardner.

LANGUAGES.

THE least learned are aware that there are many languages in the world, but the actual number is probably far beyond the dreams of ordinary people. The geographer Balbi enumerates eight hundred and sixty which are entitled to be considered as distinct languages, and five thousand which may be regarded as dialects. Adelung, another modern writer on this subject, reckons up 3064 languages and dialects existing, and which have existed. Even after we have allowed either of these as the number of languages, we must acknowledge the existence of almost infinite minor diversities; for, in almost every country, we see that every province has a tongue more or less peculiar, and this we may well believe to be the case throughout the world at large. It is said there are little islands, lying close together, in the South Sea, the inhabitants of which do not understand each other. Of the 860 distinct languages enumerated by Balbi, 53 belong to Europe, 114 to Africa, 153 to Asia, 423 to America, and 117 to Oceania, by which term he distinguishes the vast number of islands stretching between Hindostan and South America.

Looking for the cause of this immense diversity of languages no farther than immediate natural conditions, it is not difficult to come to satisfactory conclusions. Man is invested with the power of speech by means of certain organs; but the organization of no two individuals is precisely alike. Every single human being has something peculiar to himself, and in the organs of speech as well as in every thing else. Hence, the sound of every voice is palpably different in tone, and every body pronounces some particular words in a particular manner. There are family likenesses in voices and in pronunciation, or general resemblances peculiar to all the children of one pair; and there are resemblances of a more general kind in the people of one town, or district, or country. These peculiarities spring from peculiarities of organization precisely analogous to those peculiarities of physiognomy, figure, color of hair, and so forth, which characterize families, and the inhabitants of districts and countries. Their direct tendency is to give rise to peculiarities of language, that is, to different words and forms of phrase for representing the same ideas; but there is also something to check this tendency. The check is found in the disposition to imitate, which causes a number of persons living in one community to follow more or less one tone of voice, one kind of pronunciation, and one form of phrase. The operation of both the tendency and the check may be studied very well in any family of young children. Each babe will be found to have some peculiarity, causing a certain tone and manner of speech, and leading it to pronounce certain words in a peculiar way; which peculiarities almost entirely give way before the influence which the conversation of its seniors in time exercises upon it. For example, in a large family which happens to be under my observation, I have found various infants at first pronounce the word *fly* in a particular way, the varieties extending to no

fewer than six. With one it was *fy*, with another *ly*, with another *eye*, with another *my*, with another *ty*, and with a sixth *ky*. The pronunciation was, in each case, persisted in for a considerable time, but of course was at length obliged to give way before the influence of correct pronunciation in others. To a minute and assiduous observer of nature, there can be no doubt that such peculiarities originate in peculiarities of organization, which make each wrong pronunciation in each case, the most convenient and agreeable, if not the only one possible at that period of life. Now, it will be observed that the tendency is a thing inherent, and therefore of constant operation, while the check depends on accidental social conditions. Where these are weak, the tendency will get so much the freer scope, and the diversities will become wider and more numerous. When a society becomes close and intimate, the uniformity will be, on the contrary, great and permanent. Hence we see few changes take place in such civilized densely-peopled countries as those of Western Europe; where, also, a written literature is constantly operating to maintain a standard, at least in phraseology. But where people are few and sparse, or where single families are constantly parting off into new grounds of settlement, the principle of diversity must be comparatively powerful, and new varieties will be constantly arising. We see something of this in the progress of American colonization.

It is well known that, although so many languages are enumerated, there are many resemblances to be observed amongst them, both as to words having nearly the same signification, and as to grammatical forms. These are justly regarded as evidences that the languages in which they are found have something like a common origin, and that the people now speaking them, albeit remote from each other in country, are more or less nearly related—sprung, in short, from one root. Of late years, indeed, a new and most interesting light has been shed upon human history by the inquiries which have been made into languages. Nations far separated from each other, and between which no affinity was suspected to exist, have been shown to be connected, in consequence of the discovery of words common to both their languages. The grand fact of the original colonization of Europe from Asia, and even some of the leading particulars of that colonization, are inferred from the investigations of the philologist. But the most curious of all modern discoveries of this nature are certainly those relative to the structure of languages. Many of my readers have, no doubt, heard of universal grammar, that is, grammar applicable to all tongues. This was an idea very natural, when it was observed that there were nouns and verbs, voices, tenses, and so forth, in the Greek and Hebrew, in the French and German, as well as in the English. But when we became acquainted with the languages of remoter parts of the earth, we found that some of them had no such forms, and that the grammar which we have called universal is bounded by a certain geographical line, beyond which all is as different as if the people belonged to a different

planet. There are at least three other forms of language-structure, all of them of a perfectly original and distinct character.

Our own form covers nearly the same parts of the earth which have been assigned to the white or Caucasian variety of mankind. It extends from India along Western Asia, and into Europe, which it entirely fills; thence it pursues the line of European colonization in America and elsewhere. The lines along which its origin is traced all point to the Sanscrit, a dead language of Upper India, containing a valuable literature. The class of languages formed upon it is therefore called the *Indo-European*. Of this family of tongues the Celtic may be presumed to be one of the oldest cadets: it was the language of the first occupants of Europe of whom we have any record. Then, another and superior race, the Gothic, speaking another variety, appear to have advanced in the same direction, gradually overpowering the Celts, and driving them into the corners of Spain, France, and Britain; sending off the Scandinavian variety of speech into the north—perhaps sending off other offshoots to the south, which became component parts of Greek and Latin—and constituting the present German and Dutch, and partly the French and English. Next came the Slavonic, occupying Russia, Poland, Hungary, and northern Turkey. The leading features of the Indo-European class of languages are the compounding of words to make new meanings, and the inflection, or changing of beginnings and terminations, to form cases, tenses, and other variations.

The second great class of languages, occupying China and other countries of Eastern Asia, is usually called the *Monosyllabic* class, because every word in them consists of only one syllable. These words may be combined, as in the English words *welcome* and *welfare*; but every syllable is significant, and therefore is itself a word. One writer says, that the syllables of the Chinese language are under three hundred in number; another, that they are above four hundred; but the number may be considered as greatly increased by differences in the tone in which they are pronounced, these differences being either four or five in number. There are none of what we would call grammatical forms in the Chinese. Tenses, moods, cases, and the like, are left to be understood by the context, or by the order in which the words are placed. In their pronunciation, they have some of those peculiarities which could only have arisen from organic peculiarities in the originators of the language: they want the consonants *b*, *d*, *r*, *v*, and *z*, and when required to sound one of our double consonants, they always put a *u* between them; thus, *Christus* is with them *Kul-iss-ut-oo-suh*.

The Chinese, though they have been longer a refined people than any other known to exist, may be said to have a simple language. In some respects, it is such a speech as we should expect to find amongst a primitive savage tribe. What completes this wonder is, that the Indians of North America, who have made no advance in arts, literature, or institutions, possess a language remarkable for its

richness in words, and for its profoundly complicated grammatical forms. One character pervades all the original languages of America, from Greenland to Cape Horn. As a class, they have been called the *Polysynthetic*, from their combining many ideas in the form of words. They present inflections, but their most remarkable means of adding and varying sense is in a process which, for want of a better term, has been called *agglutination*. Fragments of words are taken, and, as it were, patched to each other, so as to make up a kind of short-hand sentence. For example, a Delaware woman, playing with a little dog or cat, will be heard saying to it, *Luligatschis*, meaning, "Give me your pretty little paw:" the word is made up in this manner—*K*, the second personal pronoun, *uli* part of the word *wulit*, signifying pretty, *gat* part of *wichgat*, signifying a leg or paw, *schis* conveying the idea of littleness. In the same tongue we find a youth called *pilape*, compounded from the first part of *pilsit*, innocent, and the last part of *lenape*, a man. We cannot enter farther into this subject; but it seems fully ascertained that an extraordinary degree of order, method, and regularity, prevails in the language of the red man, and that it is entirely different from the tongues of the eastern continent.

Balbi assigns 117 languages to *Oceania*, and these are all found to be connected with each other in such a way as to show one common origin. I am not aware that this class of languages is distinguished by any peculiar structure, so much as by identity of words; but they are considered as standing, in one way or another, quite apart from the other great classes. They pervade an immense extent of the world's surface, namely, from Madagascar to Easter Island, half way across the Pacific, a distance not much less than ten thousand miles.

Philologists usually reckon as a distinct class the languages spoken from early ages in the south-western parts of Asia, of which the Hebrew and Arabic are the most conspicuous tongues; but though there is much to distinguish these languages, they do not seem to be sufficiently peculiar in grammatical structure to be entitled to rank as a distinct class. It appears more likely that they are an early offshoot of the Indo-European class. The *African* languages are understood to be sufficiently well marked to form a distinct class.

Assuming that the distinctions are here correctly stated, we arrive at the important fact, that the *fundamental* varieties of human speech are comparatively few—probably less than six; that is to say, while there are so many varieties in the words employed by various nations to represent thought, there are less than six great idiomatic formulæ, or fashions of word-and-sentence-structure. In many of the languages comprehended under each of these forms, there are words in common, besides the general grammatical resemblance; but there is no community of words between the various classes—at least, it is now acknowledged that the few terms which have been traced with great effort between the Asiatic and American languages are only the result of accident. We are now called upon to remark the

curious fact, that the classes of languages correspond pretty nearly with those great natural divisions of the human race which physiologists have for some time concluded upon. The Indo-European class, if we include in it the languages of South-western Asia, comprehends the whole of the Caucasian race. The Yellow people, or Mongolians, have to themselves the Monosyllabic class of tongues; the Red race have the Polysynthetic. The Oceanic class of languages is the inheritance of what has been called the Malay variety of mankind, and the African class belongs to the Negro or Ethiopic race. Thus, all are parcelled out amongst as many families of human kind, all of which are considered as marked by many essential distinctions in stature, color, character of the hair, physiognomy, and mental endowments.

From this, some very curious and interesting deductions may be made. In the first place, language is placed amongst the organic distinctions of mankind. Hair is different, visage is different, color is different, general mental character is different; different also are speech, and the forms in which thoughts are arranged for enunciation. To find this last and most remarkable distinction in connexion with others, forms no small addition to the considerations which have led to the classification of mankind into five races. It gives and takes proof to and from that hypothesis. But the researches of Pritchard have settled that the five races are only varieties of mankind, or at least that there is a sufficient variety-producing power in nature to have raised up these different tribes from one original stock. Are we to suppose that the fundamental distinctions of languages are irreconcilable with this doctrine? By no means. They only make good a particular fact in the early history of our race, to which we must now advert; but before doing so, it is necessary to touch slightly on the process of language-formation.

Man has from nature a set of organs expressly and most admirably calculated for the production of speech. His mind has also—though this is a fact not capable of the same lively demonstration—a faculty for the expression of thought by outward signs, of which speech is the principal. A being so endowed, placed upon the world, would have within him the inclination to speak, and also the power of uttering sounds; but there would at first be no social agreement as to what sounds were to be held to represent various ideas. It would be for time to bring about such an agreement, when there was a sufficient number of people at once to occasion a decided need for language, and to form this said agreement. For a long time the numbers of mankind were probably few, and their faculties ill developed. The process of forming language would accordingly be slow. Out of the gabble in which their faculties would indulge, through the ordinary instinct which leads all faculties to delight in exercise, only a sound now and then would come to be recognised as appropriate to some certain object, quality, or act. The forming of words in this way, and their recognition by other

parties, are things which we see almost every day. Children are constantly forming new words, which become recognised in a little circle as representatives of ideas. The vicious classes of civilized communities create cant languages for themselves. There must be a constant new-making of terms for things in the mechanical arts. A peculiar readiness of tongue in some individual creates the sound: the bystanders make it a word. A friend states that one of his children has from infancy shown a turn for making new words, which the rest constantly adopt. The inclination in this instance seems almost unconscious, and none of the rest of the family has ever exhibited a similar tendency. Such a person would probably have taken a lead in language-making in a primitive society. There is a class of words which has evidently been suggested by sounds connected with the objects they stand for. The word for *calf* in Gaelic, for instance, is an exact fac-simile of the cry of the animal. It was almost unavoidable that nearly the same word should be applied to the cuckoo in the languages of all countries where that bird exists. But this class of words is, after all, less numerous than might be expected. Nor is it necessary that it should have been numerous, if there be, as above suggested, a gift in some persons for enunciating chance-formed terms, which become applied to things. But the application of a sound or a term to a thing, quality, or act, is but a first step. Many subsequent processes are needed before a language can be made up. It is at this stage that the great diversities commence; now arise those great accidents of instinctive mental working which result in making one language monosyllabic, with every single syllable significant, and another polysynthetic, with not one single syllable significant, as already shown. To borrow some explanation on this subject—"What are called ideas, are rapid perceptions continually flitting before the mental eye. Like objects viewed through a kaleidoscope, they pass before us in ever-changing shapes, and, in endeavoring to fix them on the memory by articulate sounds, the appearance of the moment will decide the form to be given to those representative signs. The man of quick perceptions will try to retain the idea of a whole physical or moral object, or perhaps a whole group of objects, in his memory, by means of one single word: another of slower comprehension, seeing or perceiving a part only, will appropriate a word or a syllable to the expression of that part, and another and another to each of the other parts that he will successively perceive. In this manner syntactic and atactic idioms* have been respectively formed; the impulse first given has been followed, and thus languages have received various organic or grammatical characters and forms. Let us give an example: At the first formation of a language, one man, by signs or otherwise, asks another to do something; the other, anxious to express his consent at once, and conceiving the whole idea, answers, *Volò*. Another man, whose mind is slower in its operations, divides the idea, and answers in

* *Syntactic*, presenting complicated grammatical forms; *atactic*, destitute of such forms, which last is the case of the Chinese.

two words, *Ego volo*, or, *I will*. Another demand is made, to which the first man does not agree; he answers, *Nolo*; the other says, *Ego non volo*, or, *I will not*. Applying this hypothesis to all languages, and their different forms, it will be perceived how in the beginning they were framed, and how their various structures have been more or less regular, and more or less elegant in their grammatical analogies, according to the temper and capacities of the nations that first formed them, and of the men that took the lead in that promotion, who may not always have been the most sensible of the whole band; for it is to be presumed that, in those early times, as in our own day, the affairs of men were not always directed by the ablest, but oftener perhaps by the most forward and presuming individual.”*

The reader will probably have anticipated the particular fact in the early history of our race to be inferred from all this—namely, that the five great varieties or families had been originated or thrown off, dispersed, and far separated, before language had proceeded beyond probably some of its simplest elements, and certainly before the rise of any of its various idiomatic forms. The physiologist could never suppose that the production of the *varieties*, nor could the philologist ever with any show of reason suppose that the formation of language, would be effected otherwise than in a considerable space of time. Thus, inquiries in these two different lines come to the same point, that the commencement of all the great leading races took place while as yet language, if it existed at all, must have been in a condition of simplicity so great that it left no trace of itself in the various tongues and idiomatic systems afterwards constructed. It has always been remarked with surprise of the civilized nations found in Mexico and Peru, that they had not the use of iron, from which it was presumed that they had parted off from the original stock in the eastern continent before that metal had been adapted to use; but here, in their language, we have evidence of their having descended from that stock while it was as yet literally in its *infancy*. They probably had devised rude means of navigation, before they had formed anything entitled to the appellation of a language; for it only could be by drifting over the intermediate seas that they reached America. The law as to diversity and uniformity, spoken of in the early part of this essay, at the same time indicates pretty clearly that, during the early ages of the world, mankind were few in numbers and widely scattered. It has been shown that where population is dense, language inclines to uniformity; where sparse, to diversity. Now, not only are the five classes altogether various, but among each class there is a very great difference both as to words and grammatical forms. For example, the foundations of the Celtic, Gothic, and Slavonic, the three great genera of the Indo-European class, could only have been laid among families placed widely apart, and which had brought away from the stock only a few common terms and a general tendency to one set of idiomatic forms. The varieties of these genera must also have been formed among a small

and widely separated set of people. The colonization of the earth may, therefore, be presumed to have generally been effected by extremely small parties, perhaps in many instances by single families. In arriving at this point, it may be remarked that we are upon the same ground to which we came in the inquiry as to the rise of nations in a late paper. It was there shown to be probable, from the law as to the production of varieties, that the origins of nations strongly distinguished in color and feature were from single migrators of strongly marked character. The unity of these results is certainly a support to both views.

It is scarcely possible to survey this wonderful history without emotions partaking of the sublime. We are accustomed to look back to the tongues of Achaia and Latium as of great antiquity, because they really are, by comparison, old, and partly because they have been so long with the things that live no longer. But these languages were but small offshoots of others which had probably existed for ages before them, and still partly exist; for the Teutonic is thought to be one element of the Latin. Those tongues came into existence, were the vehicles of the finest and profoundest thoughts of uninspired man, and then, as beautiful things are doing every day, they died. And it has been the fate of many other languages which at one time flourished, thus to fade and perish, crushed down, perhaps, by some rude conquest, or overpowered by the contact of a superior people. On the other hand, some languages have had the fortune to last for thousands of years without any material change; for instance, those of China and India. It is also strange to reflect that, till comparatively a recent time, western learning knew only of a few languages, and these all of one general character as to form, and partly also as to the constituent sounds; while there were not only thousands of other languages totally unknown, but variations as to form such as no European could have ever dreamed of, as if there had been something like four other human natures upon earth besides our own. Finally, we see new chapters in the early and as yet obscure history of mankind, arising from the investigations of a class of inquirers altogether apart from the historical—chapters undated, or whose dates do not admit of being fixed within a thousand years, but which are yet, from their basis being in fact and science, more probable and more true than many of the chronicles of recent and familiar events.

THE JOURNEYMAN PRINTER

A MENTAL lamp hung out by life's wayside.
Unnoticed: yet its unpretending ray
Shines clearly on man's intellectual way,
And proves to pilgrims an unfailing guide;
He hath within a worthy sort of pride,
And knows his worth, though some allow it not,
A heart and thinking mind above his lot
'Mong men are his. His coffers ill supplied,
Yet want and virtue seldom ask in vain:
Nor is his life exempt from various pain;
Few days are his—the rose that freshly bloom'd
On boyhood's cheek assumes the hue of death;
The oil of life within him soon consum'd,
Ere two score years and ten he yields his vital breath.

* American Cyclopædia, article *Languages*.



V. Greatrakes.—From a Portrait prefixed to his Account of Himself.

VALENTINE GREATRAKES.

THE desire to escape from pain has led mankind, in all ages, to adopt, without sufficient investigation, any means which promised to effect a cure, or to give relief in the most certain and speedy manner. From sacrifices to pagan gods, to gifts to witches, no absurdity has been too great to be adopted; but as the knowledge attendant upon civilization extends, credulity must be acted upon by means less rude, and more in accordance with the position and ideas of society. While in England the shrines of saints are altogether abandoned, in some parts of the continent their beneficial powers are still confided in, and many well-attested cases are continually published of diseases cured by visiting such places, as is asserted; of such cases there is never any want, whatever be the means proposed for securing a restoration to health, from the affidavits of the common quack, to the exhibitions of the scientific believers in the wonders of animal magnetism. In all cases alike, however, the effects which it is acknowledged are actually produced, are no doubt the results of a powerful action of the imagination, sometimes assisted by accidental circumstances.

Among the disorders particularly subject to the influence of a charm, the most common in England were the king's evil and the ague. Every old woman had a charm for the ague, and in rural districts there are some yet existing; but the more serious

evil was only to be remedied by the hand of the sovereign, and hence its name. This power was exercised with much ceremony, a special prayer being provided for it in the Liturgy, till the extinction of the Stuart family. Dr. Johnson, when a child, was touched for that disorder by Queen Anne; and Charles Edward, though only pretending to be Prince of Wales, exercised the power effectually at Holyrood House, in October, 1745. That in many cases persons recovered their health after this process, is not contested, but not so as to the power by which they were effected: at an earlier period it was attributed to the high sanctity vested in the kingly office; by others, to a direct miraculous interference of the Deity; by others, with ourselves, to the influence of the imagination; and recently it has been connected with the phenomena of animal magnetism, and this connexion is certainly established to a large extent by the cures recorded to have been performed by Valentine Greatrakes,* who assumed to have become possessed of the power of *touching*, which had hitherto been the prerogative of the sovereign alone.

From his own statement, Valentine Greatrakes (or Gratrax) was a native of Ireland, being born in 1628, at Affane, in the county of Waterford. Having received a decent education at home, he was sent,

* Greatrakes is cited as an important instance of the possession and use of animal magnetism, in the second volume of the "History of Animal Magnetism," by M. Deluze.

when about the age of thirteen, to the University of Dublin. Here he remained but a very short time, as the death of his father, and the breaking out of the Irish rebellion in 1641, forced his mother, with the rest of the family, to seek refuge in England. Young Greatrakes continued to live with the family in Cheshire for about six years, when he resolved to return to Ireland, "to recover," as he says himself, in a work to which we shall have occasion to refer more fully hereafter, "the fallen fortunes of my house." He found affairs in such confusion, that he retired to the castle of Capoquin, and "spent a year's time in contemplation. . . . My soul was as weary of this habitation of clay as ever the galley-slave was of the oar." This love of solitude never entirely left him, and appears to have laid the foundation for the enthusiasm that afterwards developed itself. He subsequently held a commission under the Parliamentarians in Lord Broghill's regiment, and served till they were disbanded in 1656, when he retired to his patrimony, which he seems to have nearly entirely recovered, married, was appointed a magistrate, and filled other official situations. On the Restoration, he was deprived of all his offices, and his want of employment probably reproduced his habits of contemplation, and in 1662 he began to feel a sort of impulse or inspiration within him that he could cure diseases by the touch. An accidental case of a scrofulous person applying to his wife as the Lady Bountiful of the village, enabled him to test his belief. In a few days a large tumor burst, discharged itself, and was healed, by the application of his hands; a result not very wonderful, if the tumor had arrived at a proper state. Numerous cases now followed in rapid succession, till at length, about three years later, an epidemic fever broke out in his neighborhood, and he believed himself called upon to visit the sufferers: he did so, and cured a great number of them. From this time he undertook the cure of all sorts of diseases, and no longer restricted his practice to the king's evil or scrofula. This affair occasioned his being cited into the ecclesiastical court of Lismore, for having pretended to act by the inspiration of the Holy Spirit. This was denied by Greatrakes; but vexation at the process, and an invitation from his old commander, Lord Broghill, now Earl of Orrery, to come to London, to undertake the cure of the Countess Conway, determined him, in 1666, to quit Ireland. His reputation had preceded him in London, and his reception was extraordinary: Charles II. received him at Whitehall, but his pretensions do not appear to have been admitted or believed in by the court. He now visited the hospitals every day, and is said to have cured many.

Such pretensions did not, of course, remain unnoticed by the press. In the same year, 1666, he was attacked by an anonymous writer, now said to be a Dr. Lobb, a physician of some eminence. In this book, called "Wonders no Miracles," Dr. Lobb makes the same objections to the process which were afterwards made against the early uses of animal magnetism, asserting that many of the patients, probably those unrelieved, made "horrid complaints of his indecent and intolerable handlings of all their parts."

The book is abusive in its style, and by no means remarkable either for fulness of facts or closeness of reasoning. He accuses Greatrakes of extortion, asserts that "all that he doth is by raising people's imagination;" that "accidents may perform many of his slight cures, and yet he have the credit of it;" that he pretended to derive his power from a voice from heaven; and imputes to him the having made a wound in a man's knee which he did not cure, and which had nearly occasioned the loss of the limb.

Greatrakes's defence, the work to which we have already alluded, was written in reply to this attack. It is entitled "Valentine Greatrakes' Great and Strange Cures, in a Letter from Himself to the Hon. R. Boyle," Lond., 1666; and in it he indignantly repudiates the call from heaven, and produces a certificate from the then Bishop of Chester, who says: "The letter which I received from him had no such passages savoring of fanaticism as a pretended voice from heaven and a vision do import." His defence as to the man's leg is curious, and shows, as well as others of his cases, that he used both surgery and medicine as auxiliaries. He says: "I made a small incision a little above the pan of the knee (as I take it), which was full of small concreted juices like measles; and it may be, as it is usual (where there is any humor), that the place where the orifice was did swell, grow red and fiery, as it must consequently before the tumor comes to a suppuration (which, in laying my hands of it, and spitting thereon, would, as it is usual, immediately have ceased);" and then goes on to deny the gangrene and danger to the limb, appealing to a statement attested to have come from the man himself, with whom he had also been accused of tampering: if he did so, he does not seem to have been very successful, as the man, even by the report of the partial reporter, only denies having used some strong terms of reproach towards Greatrakes; "but when Mr. Greatrakes told him that he doubted not but to allay the inflammation with his hand, the said person desires Mr. G. to excuse him, for the doctor and surgeon had been with him, and applied medicaments unto him; and he durst not take them off, for fear of their displeasure," &c. (p. 14.)

But though Greatrakes declines acknowledging a direct miracle in endowing him with his extraordinary power, yet he attributes it not to the temperature of his body, but to the gift of God; for which he gives as a proof, that "before the time of his first receiving the impulse, when, having been afflicted with violent headaches for many years, he had put his hand to his head a thousand times without producing any effect, but now when so troubled, he no sooner puts his hand to his head, but the pain is removed and run out." He also adds, "There are some pains which afflict men after the manner of evil spirits, which kind of pains cannot endure my hand, nay, not even my glove, but fly immediately, though six or eight coats and cloaks be put betwixt the patient's body and my hand" (p. 32); another close approximation to the wonders of Mesmerism.

To this work is affixed an appendix of certificates of cases occupying fifty pages of small quarto, attested by numerous respectable witnesses, among whom

we may mention the Hon. R. Boyle, the natural philosopher, Dr. Ralph Cudworth, the acute metaphysician, Andrew Marvell, the witty and clear-sighted patriot, Dr. Wilkins, and Bishop Patrick. Marvell signs two certificates in one day (April 10, 1666) of cures effected on Dorothy Pocock of a tumor in the breast as large as a pullet's egg, by twice stroking, and of Mr. Nicholson of Cambridge, whose general soreness and pains in the body were "run out" by a similar application. "Some remarks written in the fly-leaf of a copy we have seen (says a writer in the 'Penny Cyclopædia,' vol. v., article 'Robert Boyle') will make a good *resumé* of the evidence: 'In looking over the cases stated in this pamphlet, attested as they are by the most learned and philosophical individuals of that period, it is impossible to deny the existence of the facts as attested, without rejecting *in toto* the evidence of every historical record. Credulity may have distorted and exaggerated the reality, as witnessed by such men even as Boyle, Cudworth, Wilkins, Patrick, &c.; but doubtless the facts are essentially true as reported, and as certainly to be accounted for on the principle of mental and physical sympathy, the imagination of the patient being wrought upon by the powerful emotions excited by expectation. Half a hundred works of the most philosophical and scientific physicians might be cited in confirmation of the astonishing effects of that agitating excitement of the nervous system produced by operating upon the imagination; which perfectly explains all the wonders of animal magnetism.'

Nor were advocates wanting in his defence. The learned G. H. Stubbes, in a little work called the "Miraculous Conformist," pours out an immense deal of quotation from classical and Scriptural sources to prove that similar wonders have been witnessed before, and may therefore be believed now. He describes Greatrakes as a "man of graceful personage and presence;" says in his cures he uses "no charms—no unlawful words," but attributes his power to the temperature of his body, or, as he himself styles it, "a ferment implanted in his (Greatrakes') body." It is curious to observe a learned man deceiving himself by the use of mere words, without one exact idea, as in the following passage, by which he probably persuaded himself into the credibility of Greatrakes' pretensions: "One may conceive how, upon the efficacious touch of Mr. Greatrakes, he resuscitating the blood and innate temperature, the morbidique ferment may be ejected, and the remaining gross body, by a transposition of its texture, and a new impregnation of vitality, be re-imbibed into the blood, and become nutritious." (p. 20.)

Unlike Mesmer and some other later pretenders, Greatrakes is favorably distinguished by his disinterestedness. He took no money, and the accusation of extortion only amounts to large sums having been expended by persons coming from great distances without receiving any benefit; and even the attention he attracted by his pretensions seems to have been offensive to his habits of seclusion and contemplation. He therefore returned to Ireland in 1667, where he was still living in 1680, but the time of his death is

unknown. There is no record of his having exercised his gift after his return to private life, but it is probable that he did so among his poorer neighbors, for all the statements unite in attributing to him great benevolence, while he refused money and avoided fame. Thus actuated by none of the common stimulants which produce or foster similar pretensions in general, he departed, leaving his gift to be succeeded by some other pretension more novel though not more probable, to be again believed in by a public still credulous, though continually deceived.

In the foregoing account of the performances of Greatrakes, we see a very remarkable class of facts, of undeniable authenticity, to account for which has been one of the most difficult problems of physiology. The majority of medical men have always been disposed to deny the truth of facts so difficult to be accounted for, and a large number of narratives of such cases have been entirely discredited, unless coming from the very highest authorities. The established facts, however, which none deny, stand to this day unexplained. The supposition that everything of this kind, even the production of a profound slumber (in which surgical operations have been performed without disturbing the patient's repose), can be the effect of common sympathy and imagination, is almost too extravagant to be worthy of an argument. Even those who advance that theory are obviously ill at ease, and but half satisfied with their own explanation. If sympathy and imagination are sufficient to account for such results, why have they not been found adequate to produce them? Why have the operators always found it necessary to use a particular process, instead of relying upon a ceremony which would strike the imagination as well as the particular process that they use? Why do they not find that such results can be produced by a magic wand, as well as by the human hand?

Why is it that both operators and subjects, when perfectly honest and intelligent, are so firmly convinced that they feel an efficacious influence from the contact of the hands? Why is it that from time immemorial, frictions with the human hand have been found so beneficial in soothing pain and dispersing local inflammation? Why is it that we so often feel relief when our own hand or the hand of a friend is gently applied upon the seat of pain? The human hand is not a mere inert agent. It certainly produces effects which could not be produced by cloth, metal, or any other substance that might be substituted for it.

We ask, then, why and how the human hand produces such effects, and feels so grateful to the sick? To this question there is no answer, unless it is to be found in that doctrine which has recently been introduced into the circle of the sciences by Dr. Buchanan, under the title of NEUROLOGY. This science explains the functions of the brain, showing that they are far more numerous and complicated than has ever been conceived by phrenologists, and that it is the great regulator of the physiological functions of the body, as well as of the manifestations of the mind. It shows that every part of the

brain and every part of the body emits a particular species of influence, which, when applied to a particular class of constitutions, termed the impressible, will produce powerful effects, either salutary or morbid.

The hands are the conductors of a species of influence which is highly stimulating and efficient for medicinal purposes. The influence of the lower part of the body generally is unpleasant, while the influence of the upper part of the body and the upper part of the head is very pleasant. The influence of one of the fingers is similar to that of electricity, the influence of another is similar to that of galvanism, and of another to that of magnetism, while the thumb emits an influence highly invigorating to the muscular system. These influences come from the imponderable secretions of the human constitution. It is well known that in some cases the secretion of electricity has been so copious as to cause sparks to be given off by the person thus diseased when the hand is brought near to a good conductor. The secretion of heat, galvanism &c., may, undoubtedly, be at times in great excess.

Persons in whom the vital action is strong, and the secretions are copious, are capable of operating with great efficiency by the contact of the hands. But the marvellous results of such operations depend less upon the peculiar temperament of the operator, than upon the "impressibility" of the patient.

Some individuals may be excited by such operations beyond all control, may be thrown into catalepsy, syncope, or even monomania; or by changing the style of the operation, may be made sleepy or stupid, sick or restless, or may be soothed, warmed, and relieved from all unpleasant sensations. Yet upon the majority of persons the effects would be but slight. Hence we see why many were disappointed by the expected relief from Greatrakes. The liability to be affected in this way may be compared to the liability to being tickled. Every man cannot be tickled—neither can every man be strongly influenced by any other application of the hands.

These results having been produced empirically, or without any knowledge of the philosophy of the operation, have never been satisfactory to the scientific. Under the new light which has been shed upon the subject by the discoveries of Dr. BUCHANAN, we shall be prepared to understand and explain many of the remarkable facts of disease, somnambulism, sympathy, imagination, and the influence of the human hands, which have heretofore been entirely unintelligible. NEUROLOGY is an experimental science, demonstrating the functions of the brain, which are performed in its different parts by exciting or suppressing the action of the organs by external means. This science, which is entirely of American origin, bids fair to originate a new era in Mental Philosophy and in the principles of medicine.

MARK ANTHONY, after the battle of Actium, challenged Augustus, who took no further notice of it, than by sending back this answer: "If Anthony is weary of his life, there are other ways of despatch; I shall not trouble myself to be his executioner."

RELATION OF SCIENCE TO RELIGION.

BY WM. F. ROWLES, M. D., FULASKI, TENN.

AMONG the means of diffusing sound knowledge over every part of this young and rising nation, the newspaper press is most prominent and most regarded. If the conductors were always able and disposed to aim at right ends, none could wish for a change of the system. But whoever will calmly consider the matter and manner of a very large part of our popular journals, must confess better means might be devised to spread knowledge and promote the cause of virtue. To say nothing of the party press, or that exceedingly popular portion which is devoted especially to fashion and romance, there is much reason to regret that so few, so very few presses, are devoted to sound, sober science.

While the price of books is comparatively high, newspapers are abundant and cheap. Everybody reads newspapers; and many read nothing else. Several of the Eastern publishers are turning this popular mania for news to good account. The New World has lately issued Liebig's Animal and his Agricultural Chemistry. These works were prepared for, and by request of, the chemical section of "The British Association for the advancement of science." The latter was presented in 1840, the former was presented the present year.

Except the celebrated Bridgewater Treatises, no work has lately been published in English, under more favorable circumstances for the fame of the writer or interests of science. No work has so soon attracted so much public attention on both sides of the Atlantic. The author received a medal from the "Royal Society of London," accompanied by the remark from the President, one of England's greatest and wisest peers, that he could not determine "whether the work of Professor Liebig had conferred the greatest favor on Chemists or Physiologists." In spite of this high praise, and the extensive attainments of the accomplished author, it has been suspected his books are not perfect; indeed, what human work ever was free from blemish?

The first remark I make on his work is, that Doctor Liebig seems fully aware of the value of his production, and speaks in a tone so magisterial, that whatever of truth and beauty, nay, even sublimity, there may be in his sentences, much of their worth and weight is lost to many of our sturdy republican readers. Speaking of his co-laborers, he says:

"They treat these sciences like the vulgar, who despise foreign literature in exact proportion to their ignorance of it," etc. "They (inquirers in his field of research) reject chemistry in their inquiry into the secrets of vitality."

This may be, for aught I know, true enough of Germany, but every American physician is provided with the means, and is expected to make chemistry a part of his collegiate studies: even our Common Schools do not "reject" it. Perhaps none of the natural sciences have more devoted students in all our institutions of learning; and certainly it cannot be said that Silliman, Hare, Hitchcock, the Rogers', and a host of other American chemists have studied in vain.

That this learned German is not entirely infallible, the following passage, from page 10, will show :

"The venous blood, before reaching the heart, is made to pass through the liver: the arterial blood, on the other hand, passes through the kidneys; and these organs separate from both all substances incapable of contributing to nutrition."

Whatever advantage physiology may derive, and she will unquestionably derive much, from this valuable work, its worth and beauty will most probably be found in the chemical statistics and speculations. Some of his suppositions comprise a most grand and immense view of minute matter. After calculating the amount of carbon and oxygen reciprocally consumed and reproduced by exhalation of vegetables, and respiration of animals, he shows the amount of oxygen consumed by one man, and calculates that without this counterbalancing arrangement the present population of the earth would consume the oxygen of the atmosphere in about three hundred and three thousand years. Other calculations extend this period to about a million of years. Others, again, object, and Dr. Liebig himself states, that as the vases and other vessels, exhumed at Pompeii and Herculaneum, contained atmospheric air composed in precisely the same proportion as at present, therefore no change, in the ratio of its ingredients, having manifested itself in eighteen hundred years, we have sufficient guarantee for its future continuance. This may be so. But if some man, of sufficient authority and learning, should instruct the world that the shorter lives of modern men, compared with the antediluvians, is owing to the diminished proportion of oxygen in the atmosphere, and should assert that the ratio may remain the same, while the actual quality is reduced, would not the known relations of respiration to gases, and all the facts in Chemistry, sustain his assertions? Would not Geology show many facts to strengthen this hypothesis? and if it were asserted that animals live a shorter time in a less quantity of oxygen, and for that reason—it being assumed that there is less oxygen in the atmosphere now than formerly—men are shorter lived now than they were five thousand years since, would it be less difficult to illustrate and prove this theory by a reference to the books of science and history, than to prove the ellipticity of the Earth, or establish either of Kepler's other astronomical laws? Surely it would not.

Every advance made in science shows that the relation of things is regulated by "*weight and number*." 'Thousands of facts, in every branch of science, but more especially Chemistry and Dynamics generally, prove this. Although it is but yesterday the Atomic theory of Chemistry, or the system of Copernicus, the laws of Kepler, or the very existence of the Georgium Sidus, Pallas, Juno, etc., were known, yet all these principles and these stars continued to do their office as integral parts of the mighty Universe, which, great as it is, exists, and has its being continued by the agency of laws, regular and immutable, given at the creation. Every advance made in science, but adds to the echo of all things,

"The hand that made us is Divine ;"

an echo that is whispered by the winds, smiles from the flowers, thunders in the clouds, twinkles in the stars, in all parts of our Earth, whether we will see and hear or not.

It has been objected to this view, that the power is too small; operates too slowly, too silently; it is not appreciable. But let us remember that man is the creature of a day, his perceptions of an agent which is to produce its results on a field of view so immense must be feeble; it must elude his observation, or, at best, afford but a glimpse to the wisest of men ere they are hurried from the stage of action, and their experience and mighty conceptions, too great, often, for utterance, are lost to the world for ever.

Several arguments have been framed to establish the title of Religion to human credence. One set of writers on internal evidence have shown, or attempted to show, an accordance between the character of the Supreme and the nature of Religion. This method is not strictly logical, and has not, therefore, had success. Our knowledge of God's character must be drawn from two volumes, those of Nature and Grace; our knowledge of either is not as perfect as it should be. To assign the character of God from our limited knowledge of his works, would be as absurd—more so—than to infer the character and history of a kingdom from a single family.* The Scriptures undoubtedly reveal the character of their Author; but an argument of this sort, from them, is not logically conclusive. For a work on logic or mathematics might be, in the whole, consistent with the parts, and still not be the work of one mind.

Another argument is the purer morality of the Scriptures, whose ethics are at variance with the known evil propensities of the human heart. This remark is as beautiful as true, but by no means conclusive, for many authors cogently opposed to Christianity, and some who never heard of it, have commended and practised several Christian virtues; as truth, temperance, chastity, industry, etc. The spring of Christian action is love to God, which never prompted heathen moralists or modern infidels to write their elegant moral apothegms. So this argument is not conclusive.

A third argument is drawn from the surprising pertinacity with which the early, and all true disciples of the holy Jesus, suffered persecution, and even death, rather than renounce their faith, and from the consequent triumph and progress of Christianity in the world. Notwithstanding the many thrilling illustrations of this view in all the books of early annals, there are numerous instances on record, and daily occurring, when the utmost devotion has been shown in defence of things and sentiments, not only worthless, but absurd and false. An honest conviction is not always an indubitable proof of verity or even worth.

Another argument, perhaps more celebrated, if not more conclusive than either of the above, is that of the venerated Bishop Butler, in his Analogy. This is an answer to those who object that "the Christian Religion contains many things contrary to rea-

* Chalmers.

son and hard to be understood." The learned Bishop shows that if this objection was sufficient to destroy the Christian's faith, it equally overthrew all our knowledge of, and belief in, the phenomena of the natural world; for in it we see and believe many things we do not pretend to understand. All these, though more or less useful, some of them incalculably valuable, still proceeded little further than to show the stability of that foundation on which the *external* evidences of Christianity rest. Chalmers most ably and eloquently collated and epitomized most of these arguments.

But still another step was taken by Erskine, who made a noble array of arguments from the *internal* evidences of the Christian Religion. But after all these, some of them the most splendid performances achieved by human reasoning, the most effectual expositor of Revelation, is Revelation itself. Still, it is not less true that all science leads to, and magnifies its Great Author, than that every species of true science may serve to lead the human mind to the pure fountain, the source and object of human being and human bliss. So that, after all that Watson, Jenyns, Leslie, Paley, Dick, Douglass, etc., have given to the world, on the internal and external relations and truth of Revealed and Natural theology, little more has been, or can be done, than to point the way to the true source of satisfactory explanations. No wonder that Paul, after an ardent study of all the learning of the age in which he lived, should, after experiencing its inconclusiveness, declare himself as he does in Romans xi. 33.

This work of Dr. Liebig's, like those of Buckland, Whewell, and Kirby, is an elegant commentary on the book, or rather on a leaf in the book of Nature; and most conclusively shows, in many points of view, the utter inability of man to "scan the ways of God," while it shows the vast variety of human powers. Had Dr. L. selected a text for his work, perhaps none more appropriate than the following could have been found:

"He hath made every thing beautiful in his time; also he hath set the world in their heart, so that *no man can find out the work that God maketh from the beginning to the end.*" Eccl. iii. 11.

However much we may, with such writers as Dr. L., admire and seek to explain the secrets of nature, and however pleasing and instructive such works are, as well to the mere man of science, as to the humble Christian, it is to the latter they afford the most enduring pleasure. He looks on here unsatisfied, but not unedified, and expects the time when he shall have many doubts solved and explained, on a scale of grandeur far exceeding the most extensive and best appointed laboratory in the earth. Then,

"Oh! beyond that bourne,
In the vast cycle of being which begins
At that broad threshold, with what fairer forms
Shall the great law of change and progress clothe
Its workings? Gently,—so have good men taught,—
Gently, and without grief, the old shall glide
Into the new; the eternal flow of things,
Like a bright river of the fields of heaven,
Shall journey onward in perpetual peace."—BRYANT.

THE SPIRIT OF THE AGE.

BY J. HAGEN.

FROM the trance, once endless seeming,
Nations have awoke at last!
Man his spirit is redeeming
From the thralldom of the past.

Mind hath burst the bonds abhorrent
Ignorance had forged for her,
Leaping like a mountain torrent
O'er its rocky barrier.

Fast the clouds of doubt and error
Vanish under reason's ray,
Superstition's reign of terror
Hath for ever passed away.

Vainly rulers now dissemble,
Well their every act is scann'd;
Thrones are tott'ring, tyrants tremble,
Their destruction is at hand.

Nor can all the aid restore them
Which embattled hosts afford;
For the power that triumphs o'er them
Is a mightier than the sword.

In his rights, his worth, believing,
Man with regal pomp hath done;
Mind a vict'ry is achieving,
Such as war hath never won.

Only to the Omnipresent,
Willingly we bend the knee,
And alike, in king or peasant,
See but mortals frail as we.

Fearlessly the truth is probing
Systems time hath render'd gray;
Bland hypocrisy disrobing,
Tearing falsehood's mask away.

Science, of her toil unsparing,
Nature's mysteries to explore,
Enters, with a fearless daring,
Paths she never trod before.

From corruption's mists which shrouded
Fair Religion's form in night,
She is coming forth unclouded
In a blaze of heavenly light!

Testing, by investigation,
Everything, however sage,
Building on a sure foundation,
Is the Spirit of the Age.

Scorning creeds, however hoary,
Which man's intellect disgrace,
Pointing out the path of glory
Destined for the human race.

Speed thee, speed it on its mission—
Speed it in its work of good,
Teaching man his true position,
Universal Brotherhood!

NEW YORK, Jan. 16, 1843.



View of the Birthplace of John Bunyan.

JOHN BUNYAN.

We have no doubt that our readers will be gratified with the treat which we have provided for them in this accurate representation of the house and grounds where the immortal author of the "Pilgrim's Progress" first drew his breath. The Rev. George B. Cheever has kindly afforded us a short article upon this engraving and autograph, and we believe we shall add to the interest of the entire subject by taking the liberty to make a few quotations from his very able and eloquent review of Southey's Life of Bunyan, which appeared in the North American Review for April, 1833. That review excited great attention when it appeared, and will richly repay all who may peruse its charming pages.

This, then, is the house in which John Bunyan was born! It is a sweet place, surely, and fit, in its rural retirement, to be the cradle of genius. It is among the trees. I should like to live in such a place. What a beautiful thick wood on one side of the cottage, with those tall trees overtopping it! Many a dream of his own Beulah the child Bunyan had, while wandering and playing among those trees. There is a fence, over which he might have imagined himself stealing away into By-path Meadow, and into the grounds of Giant Despair. And that little door at the corner of the cottage, it reminds one of the Wicket Gate, through which all must

enter, who would be pilgrims. The house itself has a rustic rudeness and simplicity, but to my mind it is more beautiful than any palace in England; and if there be neatness and content inside, it is more than you can find in most palaces. This house is in the village of Elstow, about a mile from Bedford, and here John Bunyan was born in 1628.

Some twenty-five years afterwards he was born again, and began to preach the gospel. For this they put him in prison, he declaring that "if he were out of the prison to-day, he would preach the gospel to-morrow, by the help of God." He was a prisoner twelve years in Bedford jail, but he had a kind keeper, and the last four years they gave him so much liberty that he attended the Baptist meeting, and even preached the gospel, so that in the eleventh year the congregation chose him for their pastor. It was during this famous imprisonment that he produced the Pilgrim's Progress, and the book was doubtless published just before his release, or at the time of it. The imprisonment ended in 1672, commencing in 1660, when he was only thirty-two years old. This work, therefore, was composed in the interval between the age of thirty-two and that of forty-four. The tenth edition of it had been published in 1685, and Bunyan died in 1688, at the age of sixty.

Next to seeing the house in which Bunyan was born, is the sight of his hand-writing. Here it is; and what a characteristic, honest, stout, hearty, and

*He is one stout and strong in deed
 He doth not waver like as I do
 "Sighs he gives them gone loss of all
 That are obedient to the heavenly call*

JOHN: BUNYAN

spontaneous chirography! It is just such a signature, methinks, as Bunyan's favorite pilgrim, the good, open-hearted, honest-hearted Christian, would have given his name in. Indeed, I am inclined to think that the character of Christian is a true delineation of the character of Bunyan. And this is the hand in which he wrote that blessed book, the *Pilgrim's Progress*! What would we not give for the original manuscript!

"Among the host of venerated names that adorn the history of the seventeenth century, if we should select five, as indicating the most original and powerful minds that England ever nourished, they would be these: Dr. Henry More, John Milton, Shakspeare, Bacon, and John Bunyan. Of these, for originality of genius, Bunyan stands in the foremost rank. Compare his intellectual discipline with that of Shakspeare, and it will be found, that, though neither of them had much to boast on the score of education, Shakspeare's was immeasurably superior. Almost the only books Bunyan ever read (at least before he wrote the *Pilgrim's Progress*) were the Bible, the *Book of Martyrs*, and two volumes, *The Plain Man's Pathway to Heaven*, and *The Practice of Piety*, which formed the marriage portion of his wife. Of this latter book, composed by Bayley, Bishop of Bangor, more than fifty editions are said to have been published in the course of a hundred years.

"Bunyan, more than others, was a mind from the people. He worked his way out of the ignorance and vice by which he was surrounded, against much opposition, and with scarcely the slightest aid from any of his fellow-creatures. His genius pursued a path dictated by his piety, and one that no other being in the world ever pursued before him. The light that first broke through his darkness was from Heaven. It found him, even that being who wrote the *Pilgrim's Progress*, coarse, profane, boisterous, and almost brutal. It shone before him, and with a single eye he followed it, till his native City of Destruction could no longer be seen in the distance,—till his moral deformities fell from him, and his garments became purity and light. The Spirit of God was his teacher; the very discipline of his intellect was a spiritual discipline; the conflicts that his soul sustained with the Powers of Darkness were the very sources of his intellectual strength.

"Of the best part of our language, Bunyan was a master—he became so in the study of the Bible. It was his book of all learning; for years he studied it as for his life. No bewildered mariner, in a crazy bark, on an unknown sea, amid sunken reefs and dangerous shallows, ever pondered his chart with half the earnestness. It was as if life or death depended on every time he opened it, and every line he read. 'The Scriptures were wonderful things' to him. The fear of 'those sentences that stood against me, as sometimes I thought they every one did, made me with careful heart and watchful eye, with great fearfulness, to turn over every leaf, and with much diligence, mixed with trembling, to consider every sentence with its natural force and latitude.' Now would he 'leap into the bosom of that promise, that yet he feared did shut its heart against

him. Now also I would labor to take the word as God hath laid it down, without restraining the natural force of one syllable thereof. Oh! what did I now see in that blessed sixth of John, "and him that comes to me, I will in no wise cast out."—Oh, many a pull hath my heart had with Satan for that blessed sixth of John!—A word! a word! to lean a weary soul upon, that it might not sink for ever! 'twas that I hunted for! Yea, often, when I have been making to the promise, I have seen as if the Lord would refuse my soul for ever—I was often as if I had run upon the pikes, and as if the Lord had thrust at me, to keep me from him as with a flaming sword!"

"Here is the secret of his knowledge of the Bible; and his intense study of the Bible is the secret of the purity of his English style. The fervor of the poet's soul, acting through the medium of such a language as he learned from our common translation of the Scriptures, has produced some of the most admirable specimens in existence of the homely power and familiar beauty of the English tongue. There are passages even in the 'Grace Abounding,' which, for homely fervidness and power of expression, might be placed side by side with anything in the most admired authors, and not suffer in the comparison. As long as the Bible, in its present translation, is the property of all who read English, while the *Pilgrim's Progress* is the book of the people, and the merit of Shakspeare rightly appreciated, we need not fear any great corruption in the English tongue.

"We know of no other work in which we take a deeper sympathetic interest in all the circumstances of danger, trial, or happiness, befalling the hero. The honesty, integrity, open-heartedness, humor, simplicity, and deep sensibility of Christian's character, make us love him—nor is there a character depicted in all English literature that stands out to the mind in bolder truth and originality. There is a wonderful charm and truth to nature, in Christian's manifest growth in grace and wisdom. What a different being is Christian on the Delectable Mountains, or in the land Beulah, and Christian when he first set out on his Pilgrimage! And yet he is always the same being; we recognise him at once. The change is not of the original features of his character, but a change into the character of the 'Lord of the Way,' a gradual imbuing with his spirit, a change, in Paul's expressive language, 'from glory to glory into the same image.' In proportion as he arrives nearer the Celestial City, he shines brighter, his character unfolds in greater richness, he commands more veneration from us, without losing any of our affection. As we witness his steadily increasing lustre, we think of that beautiful Scripture image—'The path of the just is as a shining light, that shineth brighter and brighter unto the Perfect Day.' From being an unwary Pilgrim, just setting out, with all the rags of the City of Destruction about him, and the burden of guilt bending him down, he becomes that delightful character, an experienced Christian; with the robe given him by the Shining Ones shining brighter and brighter, and the roll of assurance becoming clearer, and faith growing



Portrait of John Bunyan.

stronger, and courage more confirmed and steady, and in broader and broader light Heaven reflected from his countenance. We go with him in his Pilgrimage all the way. We enter the Interpreter's House; we see all the rarities which the Lord of the Way keeps there for the entertainment of the Pilgrims; we turn aside from the rough path to go in the soft meadow; we are overtaken by the storm; we fall into Giant Despair's Castle,—we are there from Wednesday noon till Saturday night;—there never was a poem, into which we entered so wholly, and with all the heart, and in such fervent love and believing assurance.

"Perhaps no other work could be named, which, admired by cultivated minds, has had at the same time such an ameliorating effect on the lower classes in society, as the Pilgrim's Progress. It is a book so full of native good sense, that no mind can read it without gaining in wisdom and vigor of judgment. What an amazing effect it must have produced in this way, on the mass of common minds brought under its power! We cannot compute the good it has thus accomplished on earth. It is one of the books that, by being connected with the dearest associations of childhood, always retains its hold on the heart, and exerts a double influence, when, at a graver age, and less under the despotism given to imagination in childhood, we read it with a serene and thoughtful perception of its meaning. How many children have become better citizens of the world through life, from the perusal of this book, almost in infancy! And how many, through its instrumentality, may have been fitted after life to live for ever! The Christian Warfare is here arrayed in the glow of imagination to make it attractive.

"As the work draws to its conclusion, the poet's

soul seems to expand with the glory of the subject. The description of Christian's and Hopeful's entrance up through the regions of the air into the Celestial City, preceded by the touching account of their passing the River of Death, though composed of the simplest materials, and depicted in the simplest language, with Scripture imagery almost exclusively, constitutes one of the finest passages in English literature. The Shining Ones, and the beauty and glory of their conversation; the Angels and their melodious notes; the Pilgrims among them, 'in Heaven as it were before they came at it;' the city itself in view, and all the bells ringing for joy of their welcome; 'the warm and joyful thoughts they had about their own dwelling there with such company, and that for ever and ever;' the letters of gold written over the gate; the transfiguration of the men as they entered, and the raiment put on them, that shone like gold; the harps and crowns given them, 'the harps to praise withal, and the crowns in token of honor;' the bells in the city ringing again for joy; the shout of welcome, 'Enter ye into the joy of our Lord;' the men themselves singing with a loud voice, 'Blessing and honor and glory and power be unto Him that sitteth upon the throne, and unto the Lamb for ever and ever!'"

NAPOLEON'S SACRIFICE OF HUMAN LIFE.

NEVER was there a conqueror who fired more cannon, fought more battles, or overthrew more thrones than Napoleon. But we cannot appreciate the degree and quantity of his glory, without weighing the means he possessed, and the results which he accomplished. Enough for our present purpose will be gained, if we set before us the mere resources of flesh and blood which he called into play, from the rupture of the peace of Amiens in 1804 down to his eventful exit. At that time he had, as he declared to Lord Wentworth, an army on foot of 480,000. Here follows a detail of the different levies made from 1804 till 1814. [Total of men, 2,965,865.] This detail, which is derived from Napoleon's official journal, the *Moniteur*, under the several dates, is deficient in the excess which was raised beyond the levies; but even if we deduct the casualties, as well as the 300,000 men disbanded in 1815, we shall be under the mark in affirming that he slaughtered 2,500,000 human beings, and those all Frenchmen. But we have to add thousands and tens of thousands of Germans, Swiss, Poles, Italians, Neapolitans, and Illyrians, whom he forced under his eagles; and, at a moderate computation, those cannot have fallen short of 500,000. It is obviously just to assume that the number of those who fell on the side of the adversaries was equal to that against which they were brought. Here, then, are our data for asserting that the latter years of his glory were purchased at no less expense than 6,000,000 of human lives. This horrible inroad on the fairest portion of the population of Europe, resulted in the abandonment of every conquered territory, and the erasure of his name from the records of dominion.

NATURAL HISTORY.



THE RHINOCEROS.

THE rhinoceros is an inhabitant of most of the warmer and milder parts of Africa, of India, of the countries lying between India and China, and of the islands of Sumatra and Java. Some contemporary naturalists have been disposed to recognise four living varieties of this animal,—denominated the African, the Sumatran, the Indian, and the Javan. We shall, however, in our present article, find it convenient to neglect minute distinctions, and consider the rhinoceros simply in its one-horned or two-horned characters.

The one-horned, or Asiatic rhinoceros, is a bulky and clumsy looking animal, the specific character of which is marked by a single black horn, placed near the end of the snout. Its stature seems to vary from five to seven feet, and its length from nine to eleven. Its general appearance is of the most massy character, exceeding in this respect the elephant, from the comparative shortness of its legs. The neck is very short; the shoulders are thick and heavy; the body is thick, juts out at the sides, and has a hollow in the back; the belly hangs low; the legs are short, thick, and strong; the feet, which do not in any part project much beyond the thick legs, are divided into three hoofs, placed nearly vertically, and the middlemost of which is the largest and most rounded. The body is clothed with an exceedingly thick and rough skin, not penetrable by ordinary weapons, destitute of hair, but covered more or less with a sort of irregular incrustation which has been improperly denominated "scales." The skin is, about the neck, gathered into large folds: a fold also extends between the shoulders and fore legs, and another from the hinder part of the back to the thighs, so that the animal has the appearance of being clad in armor. Between the folds of this thick skin, the cuticle, which is left

bare, is soft and easily penetrable. The general color of the skin may be called dark gray, with a tinge of violet. To consider it in its parts:—the form of the head is compact, and somewhat triangular; the sides of the under jaw stand very wide asunder, slanting outwards to the lower edge, and backward to the neck; the edges turn outward from this structure of the bones, and the head necessarily appears very large. The number of the teeth is thirty, thirty-two, or thirty-four, according to the species. That part of the head which reaches from the commencement of the horn to the upper lip may be called the nose; it is very thick and bulky, much wrinkled, has a circular sweep downward to the nostrils, and, when viewed in front, the whole of this portion, from the top of the horn to the verge of the lower lip, has some resemblance to a bell. The under lip is like that of an ox, but the upper has more resemblance to that of the horse, and in the domestic state he is observed to use it as that creature does in gathering up hay from the rack or grass from the ground. The rhinoceros has also the power of extending this lip to the distance of six or seven inches from the nose, and then drawing it to a point. In this particular he resembles the tapir. With the instrument thus formed, and which in some measure serves the same end as the trunk of the elephant, the animal can take up and grasp with great force the smallest substances. In the wild state he appears to employ it, with the aid of his tongue, in breaking off the branches of trees, which form a principal part of his food. This lip is very soft, and appears to be the chief seat of the sense of feeling in the beast, which of all its senses seems to be the most defective. The nostrils are situated remarkably low, in the same direction with the opening of the mouth, and not more than an inch from it. The eyes are very small, much resembling those of a hog in shape, and placed nearer to the nose than in any other quadruped. There are few points regarding any known animal on which we have such opposite statements as the sight of the rhinoceros. We find that those who have studied the animal in confinement do not mention its sight as defective, but rather describe all its senses, except that of feeling, as particularly acute; whilst travellers who have observed it in the natural state infer that its sight is not very quick, as it always makes a straight-forward charge when attacked, and suffers the hunters to approach very near without seeming to perceive them. These circumstances are perhaps quite as well accounted for by the awkward structure of its limbs, neck, &c., and its hard bulky body, by which it is prevented from turning with facility or speed; and by the confidence of the animal in its own powers, and the protection of its almost impenetrable hide. Upon the whole, although this must still remain an open question, we are inclined to pay particular attention to the statement of Mr. Barrow, who indicates causes and compensations, which certainly do exist somewhere in all cases of peculiar structure or position.

After mentioning the peculiar position of the eyes in the rhinoceros, and the extreme minuteness which would seem to render them of small use to so huge

a creature, he adds :—" But nature, always provident, has remedied this inconvenience by placing them in projecting sockets, in which they turn in all directions like those of the little chameleon. Had the eyes been placed in the usual part of the face, just below the projecting forehead, which is very large, the visual rays would have embraced only about 180 degrees, or half of the horizon ; whereas, in the present position, they have a much greater scope, being able, I should suppose, without any motion of the head, to sweep from 260 to 270 degrees."—"Southern Africa," vol. ii. p. 125. It is right to mention that Mr. Barrow in this passage speaks of the two-horned rhinoceros ; but in the two species there does not appear any difference in the size or position of the eye. The ears are large, erect, pointed, and garnished with some stiff black hairs, which appear nowhere else except on the tail, which is slender, and flattened at the end.

We now come to that singular and distinctive feature of the rhinoceros—its horn—which we have reserved for particular description. This we shall give in the words of Lieut. White, of the United States Navy, in his 'Voyage to Cochin China':—"The horn of this rhinoceros is formed much like a limpet-shell, but more pointed ;—at its base it is generally about six inches long by four inches wide, and it protrudes about six or eight inches. There is a shallow concavity occupying the whole base, resembling the limpet also in this respect. To judge of the goodness of a rhinoceros horn, this concave part is put to the ear, and the greater the noise, resembling that of the waves on the seabeach, the better the horn is judged to be by the Chinese." Some naturalists describe the horn as solid, fixed, and attached to the bone of the nose ; but it is certainly connected with the skin only, and is capable of motion. The structure of the horn seems to confirm the opinion that the horns of animals are merely the result of a particular modification of hair ; it is so fibrous that it seems to be no more than an agglutination of hairs. Its use appears to be that of a defensive weapon, as well as for the purpose of uprooting or rending the animal's food. In a state of confinement, it has been observed that he strikes with it in his moments of fury, and employs it to rend and destroy that which has yielded to his efforts ; it is also brought more into use than any other part in all cases where the employment of force is necessary. It is particularly adapted by its form to be made into cups, and is much applied to that use. Thunberg says : "It is generally believed that goblets made of the horns in a turner's lathe, will discover any poisonous draught that is put into them by making the liquor ferment until it runs quite out of the goblet. Such goblets are frequently set in gold and silver, and are regarded as suitable presents to kings, persons of distinction, or particular friends ; or else they are sold at a high price, sometimes at the rate of fifty rix-dollars a goblet. When I tried these horns, both wrought and unwrought,—both old and young horns,—with several sorts of poison,—weak as well as strong,—I observed not the least motion or effervescence ; and when a solution of corrosive sublimate, or other similar substance, was poured into one of these horns, there arose only a few bubbles, produced

by the air which had been enclosed in the pores of the horn, and which was now disengaged from it."

Besides the use of its horns for goblets and handles of swords and daggers, there is scarcely any part of the animal which is not employed medicinally in the countries it inhabits. The hide is much in request for shields in most countries where it can be procured ; and an extravagant price is sometimes paid for it. Burckhardt sometimes saw as much as four or five Spanish dollars paid for a piece four inches long and one thick.

The rhinoceros lives in shady forests adjoining rivers, or in the swampy jungles with which its native country abounds. It is fond of wallowing in the mud like the hog ; it also grunts like that animal, and its flesh is said to have much resemblance to pork, though of a coarser grain and stronger taste. Its chief food appears to consist of roots, small branches of trees, and succulent plants, some of which are harsh and prickly. The rhinoceros is a solitary animal ; and the female produces one at a birth. The growth of the young is very gradual, as at the age of two years it scarcely attains half its height. The rhinoceros, though possessed of great strength, and said to be more than a match for either the tiger or elephant, is quiet and inoffensive when not provoked ; but, in a state of irritation, its undistinguishing rage is exceedingly terrible, being enabled, by its astonishing strength, to beat down or aside most things that oppose its straight-forward course.

Much that has been said above will be understood to apply as well to the two-horned as to the one-horned rhinoceros. The principal difference between them is, that the African variety has an additional horn of a smaller size situated nearer the forehead, and the skin is not thrown into the folds so remarkably as in the Asiatic variety. Mr. Sparmann dissected a two-horned rhinoceros, not of the largest size, though it measured seven feet high, eleven feet and a half long, and twelve feet in the girth. He observed that the viscera greatly resembled those of the horse ; the stomach, however, resembled rather that of the hog, or man. It had no gall-bladder, in this again resembling the horse. There were no fore-teeth, and the tongue was perfectly soft and smooth. The kidneys were a foot and a half in diameter ; the milt was four feet long and one foot broad ; the heart was a foot and a half long, and nearly as broad ; the skin was an inch and a half thick on the back, and still thicker, though less compact, on the sides ; and the anterior horn, which is the longest, was a foot long and five inches in diameter at the base ; the shape was in both horns conical, with the tips inclining backward. It is remarkable, that the two-horned variety has never in modern times been brought to Europe ; yet it was much better known than the Asiatic variety to the ancients. It is generally represented with two horns in the coins and sculptures of the Romans. The one-horned variety seems to have been earlier known than the other, though it did not afterwards become such an object of familiar knowledge to the Romans. It is probably, also, the Indian ass with one horn, mentioned by Aristotle. Pompey introduced it into the games of the Roman circus ; but, from the time

of the fall of the Roman empire, it was so completely lost sight of, that, prior to the 16th century, naturalists were of opinion that it had never existed, or that if so, it was extinct. When, however, the Portuguese doubled the cape of Good Hope, and opened the way to India, the one-horned variety again became known, and specimens were brought to Europe; the first was in the year 1513; but the first that appeared in England was not until 1684. They have never been very common, however, as objects of curiosity in Europe. The one represented in our wood-cut, which is copied from the splendid 'Histoire Naturelle des Mammifères,' by Geoffroy St. Hilaire and F. Cuvier, drew much attention in 1815 at Paris, to which place it was taken after having formed part of a menagerie in this country, to which it had been brought from India.

This rhinoceros was still young, and habitually indicated an exceedingly mild disposition, being very obedient to his keeper, whose caresses he seemed to receive with much satisfaction. Nevertheless, he was subject to violent fits of passion, and at such times it was dangerous to approach him. He then made prodigious efforts to break his chains and escape from his bondage; but the offer of bread and fruits seldom failed to succeed in soothing his most terrible passions. Those persons found the most favor with him who ministered the most to his gormandizing appetites; and when they appeared, he exhibited his satisfaction and expectation by opening his mouth and extending to them his long upper lip. The narrow limits of the cage in which he was shut up, did not allow him to manifest much of intelligence. The great object of the keeper was to make him forget his strength or forego its exercise. Hence, nothing calculated to awaken his consciousness of power was required from him. To open his mouth, to move his head to the right or left, to lift his leg, &c., were the only acts by which he was requested to testify his obedience. His great strength, and the fear that in one of his passions he might break his cage, ensured to him the most mild and soothing treatment, and he was scrupulously rewarded for the least thing he was required to do. In spite of such an unfavorable situation, the distinction he made of persons, and the great attention he paid to everything that passed around, demonstrated that, in more favorable circumstances, his intelligence might have been more strikingly manifested.

BE SOMETHING.

It is the duty of every one to take some active part as actor on the stage of life. Some seem to think they can vegetate, as it were, without being anything in particular. Man was not made to rust out his life. It is expected he should "act well his part." He must be something. He has a work to perform, which it is his duty to attend to. We are not placed here to grow up, pass through the various stages of life, and then die, without having done anything for the benefit of the human race. It is a prin-

10

ciple in the creed of the Mahometans that every one should have a trade. No Christian doctrine could be better than that. Is a man to be brought up in idleness? Is he to live upon the wealth which his ancestors have acquired by frugal industry? Is he placed here to pass through life like an automaton? Has he nothing to perform as a citizen of the world? A man who does nothing, is useless to his country as an inhabitant. A man who does nothing is a mere cipher. He does not fulfil the obligations for which he was sent into the world, and when he dies, he has not finished the work that was given him to do. He is a mere blank in creation. Some are born with riches and honors upon their heads. But does it follow that they have nothing to do in their career through life? There are certain duties for every one to perform. *Be Something.* Don't live like a hermit and die unregretted.

See that young man, no matter what are his circumstances, if he has no particular business to pursue, he will not accomplish much. Perhaps he has a father abundantly able to support him. Perhaps that father has labored hard to obtain a competence that is sufficient for his sons to live in idleness. Can they go abroad with any degree of self-complacency, squandering away the money which their fathers have earned by hard labor? No one who has the proper feelings of a citizen, who wishes to be ranked among the useful members of society, would live such a life.

BE SOMETHING. Don't be a drone. You may rely upon your present possessions, or on your future prospects, but these riches may fly away, or other hopes may be blighted, and if you have no place of your own, in such a case, ten to one you will find your path beset with thorns. Want may come upon you before you are aware of it, and having no profession, you find yourself in anything but an enviable condition. It is, therefore, important that you should **BE SOMETHING.** Don't depend upon Fortune, for she is a fickle support, which often fails when you lean upon her with the greatest confidence. Trust to your own exertions.

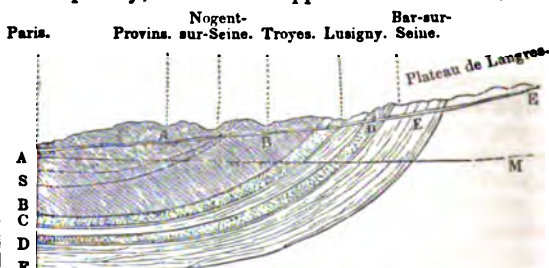
BE SOMETHING. Pursue that vocation for which you are fitted by nature; pursue it faithfully and diligently. You have a part to act, and the honor in performing that part depends upon yourself. It is sickening to see a parcel of idle boys hanging around a father, spending the money which he has earned by his industry, without attempting to do anything for themselves. **BE SOMETHING,** should be their motto. Every one is capable of learning some "art, trade, or mystery," and can earn a competence for himself. He should **BE SOMETHING,** and not bring down the gray hairs of his father to the grave. He should learn to depend upon himself. Idle boys, living upon a parent without any profession or employment, are illy qualified for good members of society. And we regret to say that it is too often the case that it is the parent's fault that they are thus brought up. They should be taught to **BE SOMETHING,** to know how to provide for themselves in case of necessity, and to act well their part they will reap the honor which therein lies.



THE ARTESIAN WELL AT GRENELLE, PARIS.

ARTESIAN Wells are so called from the probability that they were first constructed in Artois, although, from the authority of several ancient writers, they appear to have been in use in the earliest ages. The Artesian well at Grenelle, of which the above woodcut is a representation, has lately been completed, after eight years of constant labor and repeated difficulties. The south-western portion of Paris was but very poorly supplied with water, and at Grenelle, a suburb immediately adjoining the city, this deficiency was so seriously felt that it became an object of the greatest importance to find means of remedying the evil. M. Mulot, an experienced geologist, being consulted as to the practicability of constructing a well on the Artesian principle, stated that the perforation would necessarily be of extraordinary depth, owing to the nature of the district. We extract from the 'Magasin Pittoresque,' the following geological description of the basin of Paris:—"Two conditions, as it is well known, are requisite for the formation of an Artesian well: first, the existence of a pervious stratum, such as gravel, placed between two impervious strata, such as clay; secondly, the percolation of the water through the pervious stratum from a point higher than that to which it is re-

quired to rise. The basin of Paris is in the form of a hollow plate (B B) formed by a stratum of chalk. In this basin have been successively deposited the tertiary strata, in the centre of which Paris is situated. On a circular space bounded by the towns of Laon, Mantes, Blois, Sancerre, Nogent-sur-Seine, and Eprenay, these strata appear at the surface, and



[A, A, Tertiary strata above the chalk; B, B, chalk or cretaceous limestone; C, C, D, D, green sand and clay; E, E, oolite and Jura limestone; A, E, general slope of the country from Langres to Paris; A, M, level of the sea.]

conceal the chalk, but on the other side of the towns we have mentioned, the edge of the basin being passed, the chalk is found generally on the surface. If we look at the order in which the tertiary strata occur, we shall then comprehend the obstacles M. Mulot had to overcome, and the probability of the ultimate success of his undertaking. LEAV

ing unnoticed the surrounding hills, we will examine the nature of the soil which composes the Plain of Grenelle. On the surface it is formed of gravel, pebbles, and fragments of rock, which have been deposited by the waters at some period anterior to any historical record. Below this surface M. Mulot knew, by geological inductions and previous experience, that at Grenelle marl and clay would be found in place of the limestone which in general forms the stratum immediately beneath. M. Mulot was aware he must bore about four hundred and forty yards in depth, before he should meet with the sources (S), which flow in the gravel below the limestone and supply the wells of St. Ouen, St. Dennis, and Stains. Beneath the marl and clay, the boring-rods had to perforate pure gravel, plastic clay, and finally chalk, which forms the bottom of the basin in which the tertiary strata have been deposited. No calculations or geological knowledge could determine the thickness of this stratum of chalk, which from its powers of resistance might present a nearly insurmountable obstacle. The experience obtained in boring the wells of Elbeuf, Rouen, and Tours, was in this respect but a very imperfect guide. But supposing this obstacle to be overcome, was he sure of finding a supply of water below this mass of chalk? In the first place, the strata (C D) below the chalk possessed, as we shall see, all the necessary conditions for producing Artesian springs, namely, successive layers of clay and gravel, or pervious and impervious beds. M. Mulot confidently relied upon his former experience of the borings of the wells at Rouen, Elbeuf, and Tours, where abundant supplies of water had been found below the chalk between similar strata of clay and gravel.

But one other condition is requisite to effect the rising of the water in an Artesian well, viz., that the point of infiltration should be higher than the orifice above which the water is to rise. This also was the case at Grenelle. In fact, M. Arago had shown that the water of the spring in question would necessarily rise to the surface, because in the well at Elbeuf, which is nearly nine yards above the level of the sea, the water rises from twenty-seven to twenty-nine yards above the surface of the earth, and consequently from thirty-six to thirty-eight yards above the level of the ocean. Now, as the orifice at Grenelle is only thirty-four yards above this same level, it follows that if the same spring were met with, the water must rise above the surface of the earth at Grenelle.

The necessary works were now commenced with boring-rods about nine yards long, attached to each other, and which could be raised or lowered by mechanical means, and an ingenious method was adopted for giving them a circular motion. The diameter of the bore hole was about six inches. The instrument attached to the end of the lowest boring-rod was changed according to the different strata which were successively reached, the form adapted for passing through the softer materials of the surface being unsuitable to boring through the chalk and flint, a hollow tube being used for the former, while the latter was penetrated by a chisel-shaped instrument. The

size of the rods diminished in proportion to the depth, and as the subterranean water was not reached so soon as was expected, it became requisite five several times to enlarge the diameter of the bore, to admit of the work being successfully continued. Accidents occurred also, which tried the utmost patience of the projectors. In May, 1837, when the boring had extended to a depth of four hundred and eighteen yards, the hollow tube, with nearly ninety yards of the boring-rods attached to it, broke, and fell to the bottom of the hole, and it was necessary to extract the broken parts before any further progress could be made. The difficulty of accomplishing this may be conceived when it is stated that the different fragments were not withdrawn until after the lapse of fifteen months. Again, in April, 1840, in passing through the chalk, the chisel attached to the boring-rod became detached, and before it could be recovered several months were spent in excavating round it. At length, in February, 1841, after eight years labor, the rods suddenly descended several yards: they had pierced the vault of the subterranean waters of which M. Mulot had been so long in search. In the course of a few hours the water rose to the surface, and discharged itself at the rate of 600,000 gallons per hour. The depth attained was 602 yards, or about three times the height of St. Paul's at London. The pipe by which the water reaches the surface has recently been carried to a height nearly on a level with the source of supply. The pipe, as it rises from the ground, and the scaffolding which supports it, are shown in the cut. At present the water flows into a circular iron reservoir at the top of the scaffold, and it is thence conveyed by another pipe to the ground. The water is of good quality, and well adapted for culinary and domestic purposes. There is no fear of the supply proving deficient, as it is derived from the infiltration of a surface of country nearly two hundred miles in diameter. The Artesian wells of Elbeuf, Tours, and Rouen, which were formed many years ago, flow in an invariable volume. The ancient Artesian well at Lillers, in the Pas de Calais, has for above seven centuries furnished a constant and equable supply. When the source of supply is less extensive, these wells may be subject to variations, but the probability of this may generally be foreseen by the geologist and the engineer.

The opportunity of ascertaining the temperature of the earth at great depths was not neglected during the progress of the works at Grenelle. Thermometers placed at a depth of thirty yards in the wells of the Paris Observatory invariably stand at 53° Fahrenheit. In the well at Grenelle the thermometer was 74° at a depth of four hundred and forty-two yards, and at five hundred and fifty yards it stood at 79°. The depth attained being six hundred and two yards, the temperature of the water which rose to the surface was 81°, corroborating previous calculations on the subject. It is to be regretted that it was not necessary to go to a depth of about one thousand yards for a supply, as the water would then have been at a temperature of 104°, and immediately applicable to bathing establishments and other places in which warm water is required.



Remains of Stoke Manor-House.

STOKE MANOR-HOUSE.

AT a short distance from the churchyard, the stranger may see some ancient chimneys (of those beautiful forms which give old English architecture a character something different from the square lumps of brick of modern times) rising out of the masses of trees which form a picturesque background to the church. These chimneys belong to what remains of the fine old manor-house of Stoke—a place full of the most interesting associations. The history of the place is thus told by Lysons, in his “Buckinghamshire :”—

“Amicia de Stoke brought the manor of this place in marriage to Robert Poges, who was chosen one of the knights of the shire in the year 1300; his grand-daughter and heir, Egidia, married Sir John Molins, knight-baronet and treasurer of the chamber to King Edward III. In 1331 he had the royal license for fortifying and embattling his mansion at Stoke; and in 1346 he procured a charter that Stoke and Ditton, where also he had a seat, should be exempt from the authority of the King's Marshal. From Sir John Molins this manor descended by female heirs to the families of Hungerford and Hastings. Henry Hastings, Earl of Huntingdon, rebuilt the manor-house in the reign of Queen Elizabeth. The estate was soon afterwards seized by the crown for a debt. King James I., about the year 1621, granted the manor in fee to Lord Chief Justice Coke, who appears to have held it many years before as lessee under the crown. In 1601, being then Attorney-General, he entertained Queen Elizabeth very sumptuously at this place, and presented her Majesty with jewels to the value of £1000 or £1200. In 1625, this celebrated lawyer, having quitted his high station, and being out of favor with the court, was obliged, much against his will, to serve the office of sheriff for the

county; and it was thought by his friends a great degradation, that he, who had filled one of the highest situations on the bench, should attend on the judges at the assizes. Sir John Villiers, elder brother of the Duke of Buckingham, married Sir Edward Coke's only daughter, and this manor (then held by lease) having been settled on him at the time of his marriage, he was, in 1619, created a peer by the title of Baron Villiers of Stoke-Poges, and Viscount Purbeck. Lord Purbeck succeeded to this estate after the death of Sir Edward Coke, which happened in 1634, at his seat at Stoke-Poges. The house, it appears, was settled on his lady, who was relict of Sir William Hatton.

“In 1647, Stoke House was for a short time the residence of the unfortunate King Charles, when he was a prisoner in the power of the army. Not long after the death of Lord Purbeck, which happened in 1656, the manor of Stoke was sold by his heirs to John Gayer, Esq., elder brother of Sir Robert Gayer, K. B., who afterwards possessed it. It was purchased of the Gayers, about the year 1720, by Edward Halsay, Esq., one of the representatives of the town of Buckingham, whose daughter Anne married Lord Cobham. Stoke House and the manor were sold by her heirs to William Penn, Esq., chief proprietor of Pennsylvania.”

When Gray resided at Stoke, the old Manor-house was occupied by Lady Cobham; and the poem of the “Long Story” was founded upon a visit which two ladies residing at the Manor-house paid the poet at his mother's cottage. The opening of the poem is very spirited; and it gives a fine poetical notion of what the old mansion was :—

“In Britain's isle, no matter where,
An ancient pile of building stands:
The Huntingdons and Hattons there
Employ'd the power of fairy hands

To raise the ceiling's fretted height,
Each panel in achievements clothing,
Rich windows that exclude the light,
And passages that lead to nothing.

Full oft within the spacious walls,
When he had fifty winters o'er him,
My grave Lord-Keeper led the brawls ;
The seals and maces danced before him.

His bushy beard, and shoe-strings green,
His high-crown'd hat, and satin doublet,
Moved the stout heart of England's Queen,
Though Pope and Spaniard could not trouble it."

With the exception of one wing, the Manor-house was pulled down in 1789 ; and a modern house, with portico and cupola, was erected at some distance, by Wyatt. We believe that if the old house had endured to our own time, such a destruction would not have taken place. The new mansion has a more commanding site ; and is one of those pretty things which the age of George III. produced—having no characteristic of nation or age—bad copies of exotic originals. But it gives us nothing that can compensate for the sweeping away of the fabric which told the story of one of the most striking periods of our annals, and of more than one of the really great men of a great age. It is gone. We have an old kitchen left, capacious enough for the hospitality of an attorney-general who had a queen for his guest ; and the wide fire-place is still remaining with its heraldic sculptures.



In a small room on the second floor there are some rude paintings, also heraldic, on the plastered walls, with the initials E. R. ; on another side are some quaint inscriptions, among which we deciphered—

"FEARE THE LORDE.
OBEY THE PRINCE.
LOVE THINE ENMIS.
BEWARE OF PRIDE.
SPEKE THE TRUETH.
BEWARE OF MALLIS."

The scenery immediately surrounding the old Manor-house is exceedingly picturesque.

About half a mile from the church is the house in which Gray resided. It is called Westend Cottage ; and is now a very commodious villa, with pleasing-grounds and ornamental water. The house, however, has been much enlarged and modernized. It appears to us that Gray meant to describe it in the following passage of a letter to his friend Palgrave :—



"I do not know how to make you amends, having neither rock, ruin, or precipice near me to send you ; they do not grow in the South : but only say the word, if you would have a compact neat box of red brick with sash-windows, or a grotto made of flints and shell-work, or a walnut-tree with three mole-hills under it, stuck with honeysuckles round a basin of gold fishes, and you shall be satisfied ; they shall come by the Edinburgh coach."

The walnut-tree still remains ; and so does the summer-house or grotto.

We give insertion to the following stanzas, from the fact of their being the production of a girl but twelve years of age, connected with the school of the Mechanics' Institute. They afford evidence of a genius that ought to be fostered :—

ADDRESS TO THE MOON.

AND art thou, peerless orb of night,
Faithful attendant of our Earth—
Art thou placed thus within our sight
To call our admiration forth ?

Canst thou remember when, at first,
With prospects bright, and scenes so fair,
The glories of Creation burst,
And joy and music filled the air ?

And didst thou see the change which sin
Into that happy Eden brought—
Which drove our parents from within
That holy, consecrated spot ?

Yet still thy noiseless, changeless way,
Tranquil and calm thou dost pursue,—
And wilt, until that dreaded day,
When all—yea, all, shall be made new !

H. A. D.

CULTIVATION.

How fair and sweet the planted rose,
Beyond the wild in hedges grows !
For, without art, the noblest seeds
Of flowers degenerate into weeds :
Dull and rugged, ere 'tis ground
And polished, looks the diamond !
Though Paradise were e'er so fair,
It was not kept so without care.

BUTLER.



Long or Middle-Horned Cattle.—*a*, Old Craven Bull ; *b*, Shropshire Ox ; *c*, New Leicester Bull ; *d*, Devon Bull ; *e*, Devon Cow ; *f*, Hereford Bull ; *g*, Hereford Cow ; *h*, Sussex Cow.

CATTLE.

ONE of the most important, if, indeed, not the most important of man's conquests over the animal kingdom, is the ox. Its subjugation appears to have been one of his earliest triumphs : we read in the Mosaic record that Jabal was the father "of such as have cattle;" and thus are we introduced to the ox at a primitive period of man's existence on the globe. Beyond the fact, however, that this most valuable animal was then domesticated, we have no information ; and it is useless to fill up the vacuum with vague and unsatisfactory surmises. As the circumstances attendant upon the

primæval domestication of the ox are beyond our knowledge, so is our information as limited with regard to the original source whence it sprung : we know not whether the various races of domestic cattle which are peculiar to different climates are attributable to the same primitive stock or the contrary ; nor among the various wild oxen now extant are we acquainted with one to which we can refer as the type of any one of the domestic races.

It is true that a race of wild cattle existed in Central Europe within the range of authentic history, to which the ancients gave the name of *Urus*, and which, contrary to the opinion of Cuvier, Dr. Weissenborn

asserts to be identical with the European bison* or bonassus of the ancient writers, and of which he regards the aurochs or zubr of Lithuania as the descendant. If so, the urus of Cæsar is not the origin of the common ox of our part of the world.

Cuvier, however, conceives it probable that the urus of Cæsar is distinct from the bison of Pliny, which latter is certainly the aurochs (and still called bisent or wisent in some of the districts of Germany); and he is further of opinion that to this ancient urus belonged the fossil remains of a species of ox with a large head and horns, found in the superficial strata both of England and the Continent. Hence he infers that the urus is extinct, and that we are, perhaps, justified in regarding these relics in question as the remains of the primitive type of the domestic ox, namely, the *Urus antiquorum*.

Many naturalists, and among them Mr. Bell, lean to Cuvier's opinion, and certainly with much in their favor. "Upon the whole," says Mr. Bell, "I cannot but believe that the fossil bones belonged to the original stock of our domestic ox, and that the wild cattle (of Chillingham Park, the *Bos scoticus* of authors) approach so near to it, as to leave it a matter of doubt, not whether they all belong to the same species, but whether this breed be the actual remains of that original stock, or the descendants of domesticated individuals which have resumed in a great degree their wild character, from having ceased through many generations to feel the effects of human dominion." The probability, in our opinion, is, that the wild cattle still lingering in a few of the parks of England are the last remnants of a wild race once common in our forests, and specifically identical with our domestic breed; that the fossil relics are the remains of the primæval ancestors of that race; and that they belonged to the animal anciently known as the urus.

Still this is all hypothetical. Whatever may be the source whence our domestic breeds (in Europe, at least) have sprung, we cannot but acknowledge that they have undergone many modifications, from the influences of climate, pasturage, and the culture of man. Even the different districts or counties of our own island possess or have possessed their peculiar breeds. This distinction of breeds, though by care and attention it will become less marked, will never be entirely effaced while the grazier and the dairy-farmer aim at different objects.

In England, a country abounding with luxuriant pasturage, the ox, only used for the purposes of agricultural labor in a few limited districts, is destined to benefit the grazier on the one hand, and the dairy-farmer on the other. With the grazier, roundness of form, a moderate smallness of bone, depth of chest, and an aptitude to acquire external fat upon a small consumption of food, are among the points of excellence aimed at and expected. The attainment of perfection, however, in the points most desirable in the eyes of the grazier, is generally accompanied by a corresponding deterioration of cattle in those qualities connected with the interests of the dairy-farmer, for very seldom are combined an aptitude to fatten

and the quality (in the cow) of yielding an abundance of rich milk. Both parties, therefore, attend to their peculiar interests, agreeing only in the care bestowed upon the animals subservient to their respective purposes.

Among the older breeds of cattle, but now greatly modified, was a long-horned race, of which the West Riding of Yorkshire and Lancashire were the central residence, whence it extended through the midland counties and into Ireland. This breed was termed the Craven, from a district of the same name in Yorkshire, bordering upon Lancashire, and where it is said to have originally appeared.

This old breed was large and coarse-boned, and apt to be long in the body, which, however, was destitute of roundness. The milk, if not abundant in quantity, was extremely rich, and suited the purposes of the dairy-farmer. The horns were of enormous length, sometimes they projected horizontally on each side of the head; generally, however, they swept downwards, with an inward flexure, often reaching below the level of the muzzle, or even meeting before it, so as to interfere with the power of grazing. We have seen the points press against the sides of the muzzle, rendering it necessary to shorten them.

In the beginning of the eighteenth century various agriculturists commenced a series of attempts towards the improvement of this old but ever valuable breed; and to the skill and judgment of Mr. Bakewell is to be attributed the Dishley or New Leicester long-horn. In this breed the form and the tendency to acquire fat were greatly improved, and the size of the bone reduced. To the grazier the improvement in these points was of the highest value, but the dairyman preferred the old stock. In process of time, however, the new breed extended, improving the cattle of the midland and northern counties, and especially of Ireland. Everywhere, however, the long-horned has of late years yielded to a middle or short-horned race; and even in Leicestershire—the stronghold of the Dishley breed—few are now to be seen. In Cheshire also, which till recently retained a long-horned breed derived chiefly from the old Lancashire and new Dishley stocks, the Durham or short-horned race has made decided inroads, but with doubtful advantage as respects the quality of the cheese for which that county is celebrated. Among the long-horns may be reckoned the old Shropshire breed, a large boned and hardy race, and well fitted for the dairy. This breed is now seldom seen pure, having been crossed with advantage by the short-horned Holderness. Though the short-horns have superseded the long-horns in most parts of Staffordshire, the latter still continue to maintain their ground in the north of that county, and more particularly along the banks of the Dove and Trent, close to the borders of Derbyshire.

Between the long-horned and short-horned breeds of our cattle intervenes a race termed middle-horns, represented by the North Devonshire, Somersetshire, Herefordshire, Gloucestershire, and Sussex cattle.

The Devonshire breed is of great antiquity, and has been long celebrated for beauty. Like most of our other breeds, it has within the last fifty or sixty

* The bison of America has no real claim to this ancient title.

years become improved, and has perhaps now attained to its perfection.

The head of the Devon ox is small, but broad across the forehead and narrow at the muzzle; the horns have a graceful curve upwards; the chest is deep, and the back straight. The cow is small compared with the bull.

The system of ploughing with oxen is very generally practised in Devonshire, and where the land is not too heavy, no teams of oxen are superior, if equal to these, in this kind of work. Four good oxen are equal to three horses, and will go through as much labor on the road or in the field in as short a time.

To the grazier this breed is of great importance, few oxen rivalling the Devonshire in disposition to fatten and in the quality of the flesh. For the dairy, however, this breed is inferior to many as respects quantity of milk, but not quality, for it yields more than an average proportion of cream and butter. Some farmers, however, have found the North Devons to yield a large produce of milk; contrary to the common opinion, much probably depends upon pasturage. In Somersetshire the Devon breed prevails, or at least the original breed has been greatly crossed by the Devon, of which it presents most of the excellences. The Somersetshire cattle are valuable for "the pail, the plough, and grazing." The tract of country between Bridgewater and Cross produces cheese of well-known excellence; the best Cheddar cheese is made either in that tract or in the marshes round Glastonbury. The Hereford improved breed with white faces is valuable as fattening rapidly, and that on inferior fare; the flesh is fine grained, and highly prized in the market; the cows, however, yield but little milk; indeed a dairy of Hereford cattle is seldom to be found. In Gloucestershire the Herefords are preferred for the team, and by graziers for fattening, but the true Gloucester breed for milk. The Gloucester breed is of mixed origin, composed of an old race of Welsh descent, as is supposed, and of various others, and among them the Alderney. The rich vale of Berkeley produces the finest Gloucester cheese.

In Sussex the breed of cattle closely resembles that of Devonshire; according to judges, it is intermediate between the Devon and the Hereford, "having the activity of the first, the strength of the second, and the propensity to fatten and the beautiful fine-grained flesh of both." Its color is deep chestnut-red or blood-bay; deviation from these colors indicates a cross. In the Weald of Sussex oxen of this valuable stock are generally used for team-work; and so great is their strength and quickness, that many teams have travelled with heavy loads fifteen miles a day for several successive weeks without distress. As is the case with the Devon and Hereford, the Sussex cow is very inferior to the ox, and moreover does not answer for the dairy. The milk is good, but of trifling quantity. Another objection against the cows of this breed is, that their temper is restless and unquiet, and they are perpetually endeavoring to break their pasture. They are kept for breeding, and as they fatten rapidly, they repay the care and trouble they occasion. A valuable breed of middle-horns extends

through South Wales; and of this the Glamorganshire variety is highly celebrated. Oxen of this stock feed well; their flesh is fine grained, and the cows yield a fair quantity of milk. To enumerate all the breeds of the long-horned and middle-horned races is impossible within our limits; it is sufficient to have noticed the principal. The group at the head of this article exhibits, of the long-horns—1, the old Craven; 2, the Leicestershire; 3, the Shropshire. Of the middle-horns—4, the Devon; 5, the Hereford; and 6, the Sussex.

UNCERTAINTY OF HISTORY.—The Hon. Levi Woodbury recently lectured upon this topic in New York. A newspaper article recently suggests to us an apposite illustration of the subject he was developing, viz.: the population of ancient Rome. The vulgar opinion would swell it to many millions, but Gibbon estimated it at less than a single million, and we believe Hume agrees with him. Some authors reduce the number as low as four or five hundred thousand, and others swell it to even twenty-seven millions. A paper in which we find some of these particulars thinks the best supported estimate is that which gives Rome, in the meridian of her splendor, about eight millions. Since the dissolution of the Roman empire that glorious capital has been at one time reduced as low as seventeen thousand inhabitants, while her present population is less than one hundred and eighty thousand. Our authority thus dismisses the subject:—

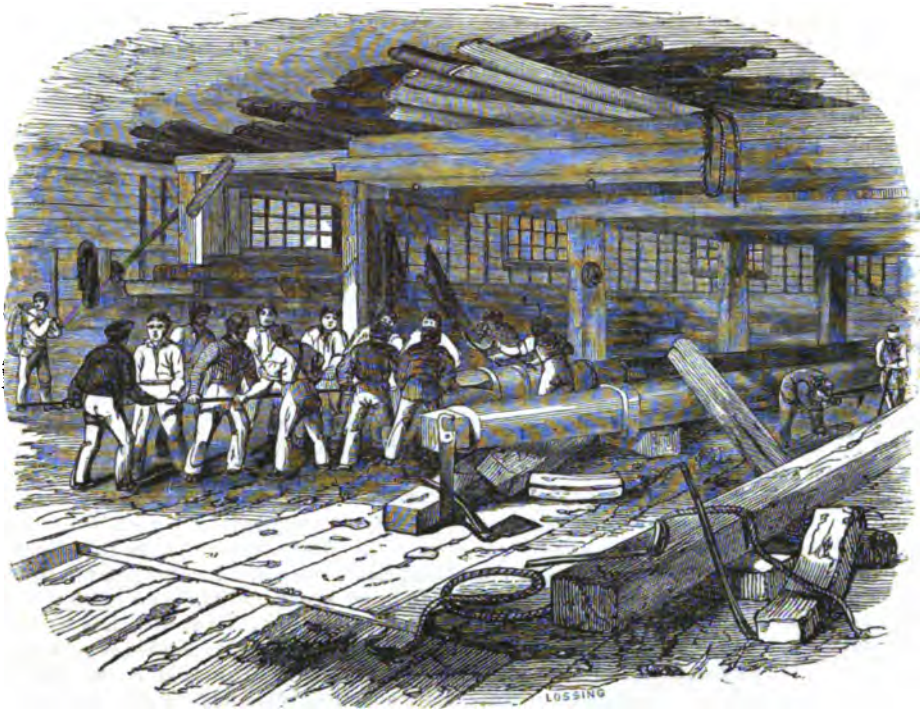
"How mutable are human events! Albion, the Botany Bay of Rome, is now the mistress of the world. The Palatine Hill is partly occupied by an English college, and a large portion of it is owned by an Englishman, Mr. C. Mills."

THE BRITISH MUSEUM.—The libraries in Europe which equal or exceed that of the British Museum in the number of their printed books, though not in their manuscripts, are Wolfenbuttle, which contains 190,000 printed volumes; Stuttgart 197,000; Madrid 200,000; and there are nine which outnumber it, viz.:

	<i>Printed Books.</i>	<i>Manuscripts.</i>
Berlin,	240,000	5,000
Gottingen,	300,000	5,600
Dresden,	300,000	2,700
Naples,	310,000	6,000
Vienna,	350,000	16,000
Copenhagen,	400,000	20,000
St. Petersburg,	400,000	16,000
Munich,	500,000	14,000
Paris,	700,000	80,000

The library of the British Museum contains about 225,000 printed books, and 22,500 manuscripts.

FIVE FACTS.—A living faith is the best divinity; a holy life is the best philosophy; a tender conscience the best law; honesty the best policy; and temperance the best physic.



Interior of Mast-House.

A DAY AT A SHIP-YARD.

THE art of ship-building involves some of the most intricate considerations which any of our manufacturing arts present; and therefore anything like an exposition of its mathematical principles is wholly foreign to our present object, which is to give a few plain details that a plain man may understand.

In the first place, then, let us suppose that a merchant orders a ship, intended for a particular line and kind of traffic, to be built by a ship-builder. The mode of measurement, by which an agreement is made between the parties, is rather singular, and is by no means easily understood by those who are not familiar with the general details of shipping. It is by *tonnage*, and is supposed to represent the number of tons of cargo which the proposed vessel will carry. Tonnage is estimated sometimes by bulk, but more generally by weight: a ton by bulk being equal to forty cubic feet; and a ton by weight equaling twenty cwt. There are certain formulæ employed by ship-builders, whereby the tonnage is calculated from the length, breadth, and depth of the vessel; but these formulæ seldom give the real tonnage, that is, the real amount of cargo which the vessel will carry; because two vessels exactly equal in length, breadth, and depth—measured as those dimensions usually are—may have very different internal capacity, owing to different curvatures of the hull. A ship will sometimes carry more cargo than her “tonnage” indicates; sometimes less; and there-

fore the word tonnage is to be regarded only as a rough approximation to the burden which the vessel will carry.

Still, however, the “tonnage” is always one of the items of agreement between the builder and the owner, partly from the circumstance that when a vessel is registered, the tonnage is made to indicate its rank or class. In addition to this, the dimensions of the vessel about to be built are agreed upon, as well as the thickness and quality of the more important timbers, the thickness of the planks laid on the outside of the timbers, and other details of a more minute kind.

The specification of the vessel being thus drawn up, the ship-draughtsman commences his labors, which are of a parallel nature to those of an architect in common building. He prepares drawings of the vessel in various points of view, so as to represent the dimensions not only of the vessel itself, but also of the principal timbers composing it, and also the curvatures of those timbers.

The draughtsman having prepared these working drawings, generally on a scale of about a quarter of an inch to the foot, the next thing is to prepare a working *mould* of the ship, as large as the ship itself, in the mould-loft. The mould-loft floor is in most instances large enough to receive half the length of the intended vessel, with the whole height; and on this floor the draughtsman chalks a large number of lines, derived from the working drawings, but enlarged to the full dimensions of the vessel. These

lines, generally speaking, represent the exact dimensions and curvatures of the timbers required to form the vessel; and when all the lines necessary for one half the length of the vessel are laid down, say the bow end, another series is then laid down, on the same floor, for the stern end; the two series intersecting and mingling among each other in every part. Practice enables the draughtsman to distinguish one series from the other, and thus obviate the necessity of having a mould-loft floor equal to the length of a large ship. When these lines, which amount to a large number, and present nothing but a confused assemblage to the eye of a stranger, are laid down, thin pieces of deal, about three quarters of an inch in thickness, are cut and adjusted to the curvatures of the lines, different pieces being joined end to end to produce the requisite lengths. These pieces of deal, which are called *moulds*, assist the sawyers in cutting the oak to the required sizes and curvatures for the different timbers of a ship; and there are certain marks on each piece which further this object. Let us suppose that one of the curved timbers is to be twelve feet in length, one foot thick, one foot wide, and so tortuous in form that its curvature is not circular, and none of its angles are right angles; in such case the piece of pine which forms the mould will give the curvature of the timber, while certain marks on its surface indicate the places where bevellings and angles are to be made from directions given on another board. On these principles the construction of the moulds proceeds, until a sufficient number of pieces is prepared to guide the sawyer in cutting all the timbers of the ship. For a large ship the number of moulding-pieces thus required is more than a hundred, each of which is marked and numbered in various ways.

The mould of the ship being thus prepared, the next operation is to cut up the oak and elm trunks to the proper dimensions for the various parts of the ship. This is called "converting," and is a process requiring great art and judgment; for the wood must be selected not only with a view to avoid waste, but also that the grain of the wood, in preparing a curved timber, may be cut crosswise as little as possible, since such a mode of cutting would greatly weaken the timber. It is therefore desirable that a crooked trunk be selected for preparing a curved timber, and that the crookedness of the one correspond as nearly as may be with the curvature of the other. The superintendence of this department is in a person possessing much experience and knowledge of the quality of different woods, and of their relative fitness for the several timbers of a ship. When this superintendent or "converter" has selected the proper wood, the operation of sawing proceeds nearly as in a common saw-pit. The trunk of the tree is laid across a frame-work in the usual manner, and two men, one above and the other below, cut the wood by means of a long saw. The thin deal mould is used as a constant guide in cutting; the curvature, the breadth, the thickness, and the angles, all being regulated either by the mould itself or by the marks and directions chalked or painted on it.

So far, then, we may suppose the principal tim-

bers to be cut. This operation is effected in saw pits, covered by sheds. As the timbers are wanted, they are conveyed to the building-slip, or that spot of ground on which the construction of the ship takes place. When the timbers are thus removed, they pass from the control of the "converter" to that of another superintendent or foreman, who is the ship-builder or shipwright properly so called.

The building-slip is prepared for the operations in the following manner: The ground having been cleared and made tolerably clean, a row of blocks is laid down from end to end of the slip, the length of the blocks being transverse to or across the slip. The blocks are of oak, placed one upon another, to the height of three or four feet, and secured together. These piles of blocks are ranged along the slip, at distances of about five or six feet apart, and the upper surfaces of all the blocks are so adjusted that they shall be in one straight line, but inclining slightly downwards toward the water, the inclination being about five eighths of an inch to a foot of length. Great care is taken in laying down these blocks, as they form the support—the work-bench, in fact—on which the whole ship is afterwards built, the keel being laid down immediately upon the blocks.

In order to understand the succession in which the parts of a ship are put together, it is useful to notice certain points of comparison between a ship and the human skeleton. The keel is the back-bone of a ship, and the frame-timbers are the ribs; the ribs forming an arched exterior to the whole of the body or hull, and the keel forming the longitudinal column to which the ribs or timbers are attached. The keel is, therefore, the principal part of the vessel, and the one above all others whose strength and security are indispensable to the safety of the vessel. From this circumstance, and from the position of the keel at the lowest part of the vessel, it constitutes the first part of a ship laid down on the slip. The keel is made of elm, and is of such length, except in small vessels, that no single tree will form it; and therefore two or more pieces are joined together, or, as it is termed, *scarfed*, end to end, until the required length is produced. This scarfing is a kind of overlapping the under part of one piece and the upper part of the other, or the right side of one and the left side of the other, being cut away near the ends, and the cut or scarfed surfaces bolted together. For a ship of a thousand tons burden the keel is about a hundred and forty feet long, fourteen inches wide, and fifteen deep. For a steamer of the same burden the length is several feet greater, since steamers are generally longer and narrower than sailing vessels of equal burden.

The sides and the ends of the keel are grooved and cut in various ways, to receive the different timbers and pieces of wood forming the hull of the vessel. Of these timbers, two, which form the main supports of the two ends of the vessel, are the *stem* and the *sternpost*, of which the former curves upwards from the higher end of the keel, and the latter rises almost perpendicularly from the lower end (for a ship is built with the stern-end towards the water, and is consequently launched stern foremost). Both are formed of oak, and are attached to the ends of

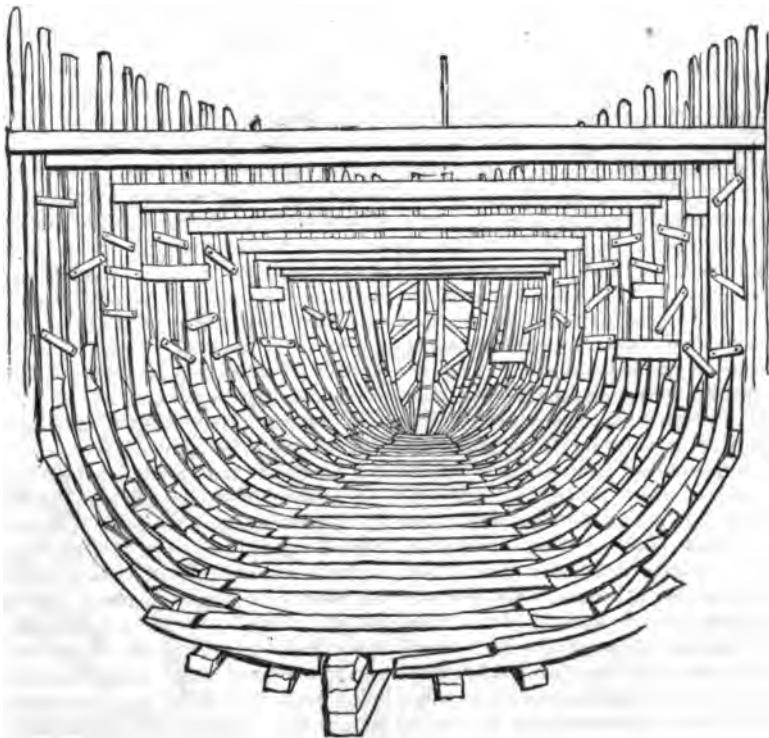
the keel in a very substantial manner. To the stern-post are attached various pieces of wood, called transoms, fashion-pieces, &c., the contour of which, when fixed in their places, is such as to give the elegantly-curved form to the hinder part of the vessel; while to the stem are attached various pieces, some of which fit it more securely to the keel, some serve to connect it with the timbers and planks afterwards to form the sides of the vessel, and others form a receptacle or support for the end of the bowsprit. The heavy pieces of timber erected thus on the two ends of the keel are hauled up to their proper positions by pulleys and tackle, and then shored up by poles from the ground, to prevent them from sinking.

Along the keel, nearly from end to end, are fixed stout timbers, called *floor-timbers*, at right angles with the length of the keel, and slightly concave on their upper surface. They are placed a few inches apart, and constitute, as the name imports, the floor of the ship. As there is a general upward curvature of the ship towards each end, the floor rises in a similar manner, and would thus leave a vacancy between the end floor-timbers and the keel; but this vacancy is filled up with solid wood, called *dead-wood*, constituting a firm foundation. The floor-timbers may be regarded as the lower part of the ribs of the ship; and above them spring up the various pieces forming the remainder or vertical parts of the ribs. No wood can be found so large, so curved, or so strong as to form the whole curved rib; and therefore each rib is built up of separate pieces, the gen-

eral name of which is *futtocks*; thus we have the first, second, third, and perhaps fourth futtock, each being a distinct piece of timber, but all collectively forming one rib, or one "frame of timbers." These pieces are placed, some end to end, and others side to side, in such a manner that the joint of two ends of timber may have a support of solid timber at its side. Various means are adopted for joining the pieces end to end, but those which are placed side by side are bolted together with bolts.

All the pieces to form one rib are adjusted and fitted to each other on the ground, and are lifted from the ground by strong tackle. The curvature and weight of the pieces are such, that after being raised and adjusted to their planes, they must be secured from falling either inwards or outwards; for the former of which purposes planks called *cross-spalls* are nailed to the upper ends of the timbers, at right angles to the keel, and stretching across from one side to the other; and for the latter, planks called *rib-bands* are placed nearly horizontal round the outside of the ribs at various heights, and are shored up by poles fixed in the ground beneath.

In this manner the ribs or frames of timbers are raised one after another, from end to end of the vessel; the two halves of each frame, that is, the two parts springing from opposite sides of the keel, being raised nearly at the same time, so as to maintain the top timbers at the proper breadth across the vessel. In this stage of the proceedings the interior shell of the vessel presents the appearance represented in our cut. We have given an *interior sketch*, because it



Frame-Timbers of a ship of 400 tons.

shows more clearly the relative position of the parts. At the bottom, just above the keel, are the floor timbers, ranged at right angles to it, and projecting some distance beyond it on either side. At the ends of these timbers are the various pieces or futtocks forming the ribs, jointed and bolted together at different parts of their heights. The ribs rise to different and irregular heights, afterwards to be adjusted; and across, from the upper part of the timbers on one side to the upper part on the other, are the spalls, the temporary wooden braces which keep the opposite sides at their proper distances.

The keel, the stern-post, and the stem, form the three great supports of the frame of the vessel; the first being horizontal, the second rising from it almost perpendicularly at one end, and the third rising in a curve at the other. Among the timbers which are subsequently adjusted to the vessel are three, called the keelson, the sternson, and the stemson, which are in some sense interior representatives of the three just named. The keelson is fixed on the floor timbers, immediately over the keel, and forms that part on which the steps or blocks of wood are placed which support the masts: it is secured down to the keel by means of bolts three feet in length, which pass entirely through both, as well as the intervening wood. The stemson and the sternson rise from the two ends of the keelson, and form internal supports to the ends of the vessel. The timbers are often strengthened within by pieces called *riders*; but in modern vessels they are frequently secured and braced one to another by diagonal iron plates, from half an inch to an inch in thickness, passing nearly from the top to the bottom of the hull, inside the vessel. Being bent round the concavity of the ship's side in an oblique direction, each piece of iron crosses several different frames of timbers, and is securely bolted to them all.

The small portion of the hull of a vessel which is seen above the level of the water presents to view a surface covered with horizontal or nearly horizontal ranges of planking; and if we could see lower down, towards the keel, we should find a similar approach to a horizontal direction in the pieces of wood with which the hull is covered. Withinside, too, a similar arrangement is observable. The vertical frames of timbers of which we have been speaking do not present themselves to the eye of a person viewing a finished vessel, either within or without. The whole are covered with planking, laid in nearly horizontal rows or "strakes." The planks may be regarded as forming the skin with which the ribs of the ship are covered; and, indeed, the shipwrights, who almost seem to regard their ship as a living being, apply the term "skinning" to the operation of laying on these planks; an opposite sense, it is true, to that in which we are in the habit of using this term. Nor is this skin by any means a trifling affair, for the thickness of the planks which form it varies from about three to six inches. The planks are formed of sound and durable oak, and are often nearly thirty feet in length. They are brought, while at the saw-pit, as nearly to the required form as may be practicable; and are afterwards worked with the adze, to

give them the proper contour. This must not be supposed to imply that the planks are hollowed or curved by the adze to the exact shape of the vessel, but that the width and thickness of adjoining planks are adjusted to each other. When a prepared plank is laid against the outside of a vessel, the convexity of the latter causes the ends of the planks to stand out several inches from it; and, on the other hand, when laid on the inside, the concave surface causes the ends to be in contact with the timbers, and the middle to be several inches away from them. The planks require, therefore, the aid of powerful instruments to force them close to the timbers previous to bolting, and this operation is further assisted by bringing the plank to a heated and moistened state by steam.

The parts of the planking vary in thickness and receive distinctive names, according to the places which they occupy; but all are treated nearly in the same way—sawn, dressed with an adze, steamed, forced to the curvature of the ship, and fastened to the timbers with bolts. The treenails (wooden bolts or pins), which are more numerous than the bolts, are not driven in till a subsequent stage in the operations. In adjusting the planks to the ship's sides, care is always taken that the adjoining ends of two planks in one row or strake shall not occur at the same part of the ship's length as a joint in the row next above or below it, a caution similar to that observed in laying the courses of bricks in a wall, or the rows of slates on a roof, and the object of which is sufficiently obvious in relation to the strength of the structure.

In the building of a ship, matters are so arranged that many different parts are in progress simultaneously; some workmen making preparations for the beams of a vessel withinside, while others are planking the exterior, and others perhaps engaged at various parts of the head and stern. The beams are stout and well-finished timbers stretching across the vessel from side to side, at intervals of a few feet, and serving not only to support the deck or decks, but also to bind the two sides of the vessel together. These beams, situated as they are at right angles to the keel, have given rise to many nautical expressions which are rather incomprehensible to general readers: thus the "breadth of beam" is the width of a vessel; an object seen at sea in a direction at right angles with the keel, is said to be "on the beam;" when a ship inclines very much on one side, so that her beams approach to a vertical position, she is said to be "on her beam ends;" and many other similar phrases might be adduced.

The beams are ranged at such distances apart, that a vessel of a thousand tons burden requires about thirty beneath the main deck. Each beam is usually formed either of one or of three pieces, according to the dimensions of the vessel; the three pieces, in the latter case, being securely joined or scarfed together. The beams are not straight, but are curved upwards in the middle, so that their upper surfaces are convex and their lower concave; the bending being such that there is a curvature of about one inch to every yard in the length of the beam. The ends of the beams are made to rest on stout planks

called clamps ; but the real fastening is by means of iron brackets technically termed *knees*, bolted both to the beam and to the timbers of the ship. Besides the fastenings at the two ends of each beam, there are supporters in the middle, which are often formed of cast-iron, combining lightness of appearance with strength.

Various ledges and frames, called *partners*, *coamings*, and *carlings*, being arranged between the beams, the decks are next attended to. These divide the hull into different stories, analogous to those of a house ; and in the one case as in the other, the number of floors is greater in some instances than in others. Large ships of war are furnished with three entire decks, reaching from the stem to the stern ; besides two shorter decks called the forecastle and the quarter-deck, the one placed at the head of the vessel and the other towards the stern, a vacant space called the *waist* being left between them, at the middle of the ship's length. The deck is generally made of fir, hemlock, or cedar ; and for vessels exposed to a hot climate, yellow pine is sometimes employed. The deck-planks are laid side by side, lengthwise of the ship, or parallel to the keel, and vary from six to ten inches in breadth, and from two to four in thickness. They are nailed down to every beam and to every carling, either with iron nails or with nails formed of a mixed metal.

We have said that the planking which covers the inside and outside of a ship is secured, partly by bolts and partly by wooden pins called treenails, to the timbers ; and that the treenails are not driven in until some time after the bolts. The object of this seems to be, that by making the treenail-holes a considerable time before the treenails are inserted, the wood round each hole has an opportunity to become seasoned.

The labor of boring the holes for the treenails and bolts is often very severe, from the hardness of the wood, the great depth to which the hole is to be bored, and the awkward position in which the man has to place himself. The curvature of a ship near the keel is almost horizontal, and at other parts goes



Boring.

through all the gradations from a horizontal to a vertical direction ; and the man who is engaged in bor-

ing the treenail-holes has to vary his position and mode of working, sometimes standing and at other times sitting, according to the part of the vessel at which he is at work. It is so arranged that the same treenail shall pass, not only through the outer planking and the frame-timber, but also through the inner planking ; by which all three are bound well together ; and the treenail-holes are bored in conformity with this arrangement. When the proper time arrives for driving in the treenails, a set of men, each provided with a large and heavy hammer, proceed to that operation. The treenail is made slightly larger than the hole into which it is to be driven, so as to bite or cling closely to the timbers ; and a succession of powerful blows is requisite to urge it forward. The treenail is a little longer than the depth of the hole, and the superfluous end is taken off with a saw when the driving is finished. It is then tightened in the hole by small wedges driven in at the end.

The planking and treenailing having brought the surface of the hull to a tolerably even state, which is further assisted by a little trimming or "dubbing" with the adze, a process follows which is indispensable to the exclusion of water from the vessel, viz., that of *calking*. The planks cannot be brought so



Calking.

close together as to make the joining impenetrable to water, and the joint is therefore filled up with oakum. A kind of chisel, called a calking-iron, is employed to drive the threads of oakum into the seams. The oakum is not placed merely at the outer edges of the crevices, but is driven in to a depth equal to the whole thickness of the plank. Sometimes the edges of the planks are chiselled away a little, in order to afford room for the entrance of the oakum ; and in all cases the calkers manage the seams in such a manner as to fill them up with a dense and compact layer of oakum, which not only answers the purpose of making the vessel tight, but also helps to consolidate and strengthen the whole ship in a very considerable degree, by making the edges of the planks bear hard against each other, so that one part cannot move or work independent of another. At the time when this calking of the

seams is going on, the planks themselves are examined, and any shakes, or rents, or fissures, however small, are well filled with oakum. This process being finally completed, all the calked seams are coated, or, as it is termed, "payed," with hot melted pitch and rosin, by which the hempen fibres of oakum are preserved from the action of the seawater.

The operations withinside the vessel are, as may be supposed, much more varied than those on the outside, but they partake more and more of the nature of carpentry, as the construction of the vessel advances. After the various pieces are adjusted which form the main support of the different parts of the vessel, the hull is divided into compartments accordant with the purposes for which the vessel is intended. Supposing these matters to have been completed, we will next proceed to the important affair of *launching*, by which the vessel is borne on to the liquid element which is afterwards to form her home. Those persons who have never seen a ship launched, and who are but little acquainted with these matters, may feel it desirable to know in what stage of the building process the launching is effected. We may here mention, then, that the hull is launched before it has been sheathed or coated with copper, and also before it is fitted with masts, yards, bowsprit, rudder, sails, or ropes. There are various reasons why these several parts are more conveniently fitted after than before the launching; the height of the vessel from the ground when on the building-slip—the angle at which it slopes towards the water—the difficulty of getting into the vessel, &c., are some of these reasons; and with regard to the sheathing, it is deemed better to be postponed until the soundness of the naked planking has been tested by immersion in the water.

We explained before that the ship is built on blocks, laid in regular succession along the building-slip, and so adjusted that the keel, which rests immediately on their upper surfaces, shall have an inclination of about five-eighths of an inch to the foot towards the water. These blocks form the central support beneath the vessel, during the whole progress of building; and the vessel is further supported at the sides by shores, or poles, raised at various angles from the ground. As the time of launching approaches, preparations are made for removing all these lateral supports, for lifting the keel completely from the blocks, and for constructing two temporary "slippery paths" down which the vessel may slide into the water. The whole of these operations are very curious, and require great nicety and care to ensure success. Along the building-slip, on each side of the keel, and distant from it about one-sixth of the vessel's breadth, is laid an inclined platform, formed of many pieces of wood, and presenting a flat upper surface inclining downwards towards the river at an angle of about seven-eighths of an inch to the foot, and consequently more sloping than the position of the keel. The inclined plane thus formed is called the "sliding-plank;" and it has a raised edge, or ledge, called the "side-way," or "riband," projecting four or five inches upwards from its outer

edge. The sliding-plank is placed upon supporting blocks, so as to be elevated some feet from the ground. A long timber called a "bilge-way," with a smooth under-surface, is laid upon this sliding-plank; and upon this timber, as a base, is erected a frame-work, reaching up to the hull of the ship. This frame-work, which is called the "cradle," is formed partly of solid wood-work, filling up the whole space between the bilge-way and the hull, and partly of short poles called "proppets," which are erected nearly vertically, and abut against a plank fastened temporarily to the bottom of the ship. These operations are carried on on both sides of the keel, and at a few feet distant from it; and the vessel may in this state be almost said to have three keels, the real one midway between two temporary ones. At a certain stage in the building up of these pieces, a layer of tallow, soap, and oil, is placed between the sliding-plank and the bilge-way, to diminish the friction during the sliding of the latter.

But it is not sufficient that these two temporary false keels reach up to the hull: the hull must actually bear with its whole pressure upon them, so that the blocks beneath the real keel may be relieved from the enormous weight of the vessel. To effect this, a great number of wedges are driven in just above the bilge-way, by the action of which the vessel is in some degree lifted off the blocks, and made to rest on the bilge-ways. This operation is one of the most singular which a ship-yard presents. Very frequently a hundred men are driving the wedges at once; half of them being ranged on one side of the vessel and half on the other.

A few other arrangements being made, the ship is ready for launching. A screw is fixed against this end of the keel, to assist in urging the ship forward, if such a course be necessary, and some of the blocks under the keel are cut away, to make the vessel rest more entirely on the bilge-ways. At a given signal two men, one on each side, knock away the dog-shores; the vessel glides slowly downwards into the water; a flask of wine is thrown at the head; she is christened with the name selected for her; and when she touches the water all give her a hearty greeting.

Having launched our ship, we will next proceed to speak of the masts with which it is to be furnished. Masts serve as supports to the sails, and are themselves supported by ropes and tackle. The number varies in different kinds of ships; for instance, a ship properly so called is provided with three masts; a brig and a schooner are each provided with two; while one mast forms the complement for a sloop, a cutter, or a smack. But it is necessary here to remark, that a mast is not, except in small vessels, a straight piece of timber put up in one single length; it is generally formed of three stages or tiers rising one above another, each of which receives a distinctive name. Let us take for example a 74-gun ship of war. Here are three masts, the foremast, the mainmast, and the mizen-mast; and each one of these three is formed of three subordinate masts, rising one above another, of which the lowest is termed the lower mast, the next in height the top-

mast, and the third the topgallant-mast. The length of the lowest is rather more than that of the other two put together; and the united length of the whole is, in the case of the mainmast, above two hundred feet. In a merchant vessel, say of a thousand tons burden, the arrangement is just the same in principle, but the dimensions smaller, the nine subordinate masts varying from about twenty to ninety feet in length, the shortest being the mizen topgallant-mast, and the longest the lower mainmast.

The mast-makers have some tools peculiar to themselves; but the main operations bear some resemblance to those by which the timbers of a ship are fashioned. The various pieces of which a mast is built up are sawn to their proper dimensions, and fitted together by various kinds of joints, called coaking, dowelling, &c., and of which the common tenon and mortice will furnish some idea. Various cutting instruments are employed to give the rounded or convex form to the mast, when the pieces are put together; and pieces of wood are attached to its surface to answer several purposes, when the mast is put in its place in the ship. The extent to which this building of a mast goes may be judged from the fact that the lower mainmast alone of a large packet vessel weighs upwards of six tons; and when lying along the floor of the mast-shop, its length of ninety feet and thickness of two and a half impress one with no mean idea of its bulk.

The various pieces of which a large mast is formed would not be permanently retained in their proper places, were there not some external band or tie employed. The band used for this purpose consists of a series of iron hoops, ranged at intervals of four or five feet apart along the mast. These hoops are formed of iron bands about three inches in width and three-eighths of an inch in thickness; and after being welded as nearly as may be to the girth of the mast, they are fixed on it. Each hoop—of which the lower mainmast contains about twenty, and the others a proportionate number—is in the first place heated, not to such a degree as would scorch the wood on which it is laid, but so far as to give a slight expansion to its dimensions. As the hoop is driven onwards to a thicker part of the mast it necessarily binds the wood more tightly, and this is still further effected by the contraction of the hoop as the iron becomes cold. The ultimate effect is that the hoops give an extraordinary degree of strength to the mast. Our frontispiece represents this process of “hooping a mast.”

The *bowsprit* and the *yards* of a vessel are made by the mast-makers, and may indeed be considered as masts so far as the mode of making is concerned. The bowsprit is a large mast which projects obliquely over the stem, to carry sail forward, in order to govern the fore-part of a ship, and to counteract the force of the after-sails; it also serves to hold the stays or ropes by which the foremast is kept in its position. It generally rises at an angle of about thirty-six degrees. It very nearly equals in diameter, and is about two-thirds of the length, of the lower mainmast. The *yards* are long pieces of timber suspended upon the masts, for the purpose of extend-

ing the sails; some being suspended across the masts at right angles, and called square yards; others suspended obliquely, and termed lateen yards. The number of these yards in a large ship is about twenty, and the dimensions of some of them are very considerable.

While hearing of these very large and ponderous masts, yards, &c., the reader may naturally inquire how they are conveyed to the ship, and lifted in their places. On this point we will now offer a brief explanation. The great difficulty is to get in the three lower masts; for the upper ones are afterwards drawn up by means of tackle with comparative ease.

The *sheers* used in masting vessels are two large poles, masts, or spars, erected on the vessel whose masts are to be fixed; the lower ends resting on thick planks laid along the sides of the deck, and the upper ends crossing each other, where they are securely lashed. The point where the two spars cross is exactly over the hole where the mast is to be dropped through the deck; and the spars are retained in this position by strong ropes attached to different parts of the ship. The mast, being floated to the side of the ship, is elevated entirely above deck by means of tackle connected with the sheers; and when it is brought with the lower end immediately over the hole in the deck, it is gently lowered into its place, passing down through the entire height of the vessel, and resting on the step or block fixed to the keelson. When one of the three masts is fixed in this way, the sheers are moved to the spot where the second is to be placed, and afterwards to the third. This is the general mode of masting merchant ships.

The rigging of a ship, which is generally understood to imply the whole assemblage of ropes with which she is fitted, is of two kinds, one termed the *standing* and the other the *running* rigging. The former term is applied to all the shrouds, stays, back-stays, and other ropes which are employed to maintain the masts and bowsprit in their proper position, and which remain pretty nearly in a constant state, whether the ship is in full sail or all the sails are furled; the latter term is applied to various ropes called braces, sheets, tacks, halliards, buntlines, &c., which are attached to different parts of the masts, yards, sails, and shrouds, and are employed principally in furling and unfurling the sails for the purposes of navigation. The whole of this rigging is made of hempen fibres, more or less saturated with tar. Those pieces of cordage which are devoted to the management of the anchors are termed *cables*; those which are employed in the general operations of rigging, and are more than an inch in circumference, are termed *ropes*; while cordage of smaller dimensions than this is generally called *lines*. But this classification is not sufficient for the purposes of the seaman; every cable, rope, and line, has a distinctive name belonging to it, according to the place where, or the purpose for which it is applied. The breast-rope, the davit-rope, the quest-rope, the heel-rope, the parral-rope, the bow-lines, clue-lines, bunt-lines, tow-lines, leech-lines—however unintelligible to general readers—are associated with perfectly

definite ideas in the mind of a seaman, and have a regular scale of dimensions.

The business of a ship's-rigger is distinct from that of a ship-builder; and the operations may or may not be carried on in a ship-building yard, according to the facilities which the yard presents and to other circumstances.

But wherever the rigging may be carried on, the operations are always nearly alike. The rigging-house is a place provided with tackle for stretching the ropes, and with the necessary instruments for attaching the blocks, rings, &c., required for fixing the ropes to the ship, and for managing the sails. The blocks here alluded to are a kind of wheel working in a wooden case, round the circumference of which a rope is passed to act as a pulley. The outer case or "shell" of a block is made of elm or ash, and after being rounded somewhat to an oval form, various perforations are made through it. One of these is for the reception of a pin or spindle, made of *lignum-vitæ*, or some other hard wood, or of iron; and others are for the reception of the wheels or "sheaves," which vary from one to eight in number in each block, and which are made of *lignum-vitæ*. The adjustment of the ropes to these blocks, to iron rings and hooks, and to each other, devolves upon the rigger, who is provided with instruments for cutting, stretching, bending, and tying the ropes in their proper places. The cordage employed for a large vessel weighs several tons, and some of the ropes are four inches in diameter: the bending and fixing of such ropes as these, therefore, require powerful implements. Among the operations which much of the cordage undergoes before it is taken to the ship, is that of "serving." This consists in binding a smaller rope very tightly round it, in order to preserve it both from rotting and from any friction to which it may be exposed. The substance thus bound round the rope is not necessarily a made-rope of smaller diameter, but is sometimes

tion of the process of "serving" a rope with spun-yarn. The yarn might be simply twisted by hand round the rope, but the necessary tightness and compactness would not be thus attained; and a mallet is used instead. The rope being stretched out horizontally, a man provided with a mallet, and a boy holding a ball of spun-yarn, stand opposite to each other at about two feet distance. The mallet, which has a concave groove on the side opposite to the handle, is laid on the rope, handle uppermost. Two or three turns of the spun-yarn are passed tightly round the rope, and round the body of the mallet; and while the boy passes the ball of yarn continually round the rope, the man, at the same time, and in the same direction, winds on the yarn by means of the mallet, whose handle, acting as a lever, strains every turn about the rope as firmly as possible. The yarn then appears like a screw whose threads pass almost transversely round the rope.



Sail-making.

The breadths of canvass are joined by stitching or "seaming," the stitches having a degree of closeness well agreed upon between master and man, and such as to include rather above a hundred stitches in a yard of length. The seam or overlapping is from an inch to an inch and a half in width. Besides the stitching of the seams, various pieces of canvass called linings, tablins, and bands, are stitched on the sail in different directions, for the sake of strengthening it at those parts which are most liable to strain. There are also many small holes to be made in some of the sails, for the reception of short pieces of cordage necessary in reefing the sail.

The ropes are sewn to the edges of the sail in a very careful manner; arrangements being at the same time made for the formation of numerous loops, eyes, and other mechanism necessary for the subsequent guidance of the sail. The operation of the sail-maker proceeds, until the whole suit of sails, generally about forty in number, for a ship, are made.

The anchors, the colors, the interior fittings and furniture, and a large variety of matters which we cannot even enumerate, being also completed—the lady, in fact, being decked out in her complete attire—she is sent out of dock to the bosom of the waters.



"Serving" a rope.

formed of old canvass, mat, plat, hide, or spun-yarn, according to circumstances. All these substances receive the common name of "service;" and the mode of proceeding may be understood by a descrip-



LORD BACON AND HIS LOCALITIES.—The Portrait from the engraving by Marshall, 1641, prefixed to Bacon's "Life of Henry VII." Beneath the portrait his arms, taken from Marshall's portrait; the Chancellor's Mace, Autograph of King James, and other insignia of office, from original authorities. At the top, to the left, York House, from a drawing by Holla, engraved in Wilkinson's "Londini Illustrata;" to the right, Old Gray's Inn, from a print in Pennant Collection, Brit. Mus. At the left side, Gorbambury, from a drawing of the remains of the original mansion by Neale, 1810, engraved in "Beauties of England and Wales;" and Highgate, with the Old Church, from a print by Chatelaine, 1740. At the bottom, St. Michael's Church, St. Alban's, from a drawing in George III.'s Collection, Brit. Mus.

LOCAL MEMORIES OF GREAT MEN.

BACON.

A MORE impressive or valuable lesson, one of wider or more permanent application in the conduct of life through the trials and temptations of the world,

MARCH

10

it would perhaps be impossible to find, than in the history of the greatest of modern philosophers. There, the extent of misery and degradation which may await the highest intellectual powers, if they are not steadily directed to the fulfilment of the great purposes for which they were given, receives a more vivid illustration than it has ever before received, than we may

expect it will ever receive again: it is sufficient for one such man to have thus suffered, for one age to have exhibited so melancholy a spectacle. But is it only the great ones of the earth who are to take the lesson home? Is it they only who palter with their better judgments, who but too often make their actions but one continued satire on their thoughts, consciences, and, we might add, wishes? The answer is obvious. Of all errors or vices, this, in a lesser or greater degree, is probably the most common. How few of us are there, it may be feared, who do not, for the sake of worldly interests, sometimes quit the plain high road of strict duty and right, calculating, as doubtless Bacon calculated, that it would be easy to return uninjured; who do not, like him, yield but a divided allegiance, seeing perhaps, as he saw, the folly of the hope in others of serving both "God and Mammon," yet, like him, clinging not the less pertinaciously to it ourselves. To all then but those who are free from temptation or above it, the "Local Memories" of this great and in many respects illustrious man will be full of matter for the deepest reflection: of their interest it would be idle to speak.

Francis Bacon, the youngest son of Sir Nicholas Bacon, who held the office of keeper of the great seal for twenty years during the reign of Elizabeth, was born at York House in the Strand, on the 22d of January, 1561. The history of this mansion is not unworthy of notice. It was originally an inn or palace of the bishops of Norwich, and exchanged by them with the archbishops of York for Suffolk House, Southwark: from that time it was called York House. Here Bacon was born, and spent some portion of his boyhood; and here, later in life, he lived in the greatest magnificence: after his fall it was purchased by Buckingham, who appears to have rebuilt or greatly improved it. It was next settled by the parliament upon its general, Lord Fairfax, and then, curiously enough, it reverted, by the marriage of Fairfax's daughter with the second earl of Buckingham, into the hands of the Villiers family. The house, or at least the greater part of it, was now pulled down, and upon the site, and within its precincts, were built the four streets which still bear that nobleman's name and title—George, Villiers, Duke [of], Buckingham: the "of" gives name to an alley. The only remains of this beautiful mansion are York Stairs, one of Inigo Jones's most admired works, and a part of the old ceiling, still preserved in the house No. 31, Strand, at the corner of Villiers Street. Whilst yet a boy, Bacon attracted the notice of the queen, who called him her young lord keeper, and had frequent occasion to admire his ready address and dexterity. She once asked him how old he was: "I am just two years younger than your majesty's happy reign," was the ready reply. The future courtier is here already visible. The future philosopher was no less so in the fact of his leaving his play-fellows to go to a vault in St. James's Street to investigate into the cause of an echo he had there discovered. In his thirteenth year he entered Trinity College, Cambridge. Of the very early development of his mighty intellect, Dr. Rawley, afterwards his chaplain and biographer, records an interesting proof. "Whilst he was com-

morant at the University, about sixteen years of age (as his lordship hath been pleased to impart unto myself), he first fell into the dislike of the philosophy of Aristotle; not for the worthlessness of the author, to whom he would ever ascribe all high attributes, but for the unfruitfulness of the way, being a 'philosophy (as his lordship used to say) only strong for disputations and contentions, but barren of the production of works for the life of man.' In which mind he continued to his dying day." It is said, and the preceding statement makes it probable, that he at this time formed the outline of his own system, which was in direct antagonism to the ancient philosophy, as we shall hereafter see. On leaving college he visited the Continent, from whence he was recalled in 1580 by news of the sudden death of his father. His prospects were sadly clouded by this event. He now desired to employ his great talents in literature and politics. The ruling statesmen, the Cecils, were relatives of Bacon, and he naturally expected their assistance. But he was one of those able men whom he says, and with every appearance of truth, it was their especial policy to suppress. All his applications, and they were numerous, and somewhat servilely humble, were disregarded, and he found himself compelled to study the law. He accordingly entered Gray's Inn, a place to which from that time to his death he was much attached, and with which many of his pleasantest memories were associated. The apartments on the first floor of the house No. 1, on the north side of the square, are said to be still in the same state that they were when he last visited them. The walls have a handsome oak wainscoting, and over the chimney-piece is a beautiful ornament. In the garden, which he greatly adorned, and where doubtless many of his happiest hours were spent, there were but a few years ago some trees planted by his own hand. The books of the Society abound with his autographs, written in connexion with the business of the Inn, of which he was even then recognised as the most distinguished member. Although the hall in which Bacon so often sat no longer presents its former aspect, there is still much left of the original structure.

We must now pass rapidly over many important events in Bacon's life. He was called to the bar in 1582, made a bencher in 1586, appointed counsel-extraordinary to the queen in 1590, and at last received something like a recognition from the Cecils of his claims upon them, in the grant of the reversion of the office of registrar of the Star Chamber. This, as Bacon says, "mended his prospects, but did not fill his barn," for it was twenty years before he began to receive the salary, which amounted to 1600*l.* a year. When the office of solicitor-general became vacant, Bacon's early, warm-hearted, and noble-minded friend, the Earl of Essex, made the most strenuous efforts to obtain it for him, but the Cecils were adverse and all-powerful. To mitigate the disappointment, Essex gave his friend an estate worth 1800*l.*, and in so doing, Bacon says, "the manner was worth more than the matter." When Essex's fortunes began to decline, Bacon remonstrated with him in a kindly manner, and even when, in spite of all his advice, Essex's rashness broke out into open insurrection against the queen, Bacon still used all his

influence and address to mitigate its consequences. But now there was a great change. He had perhaps by this time received a hint that he was treading upon dangerous ground in his efforts to save his friend ; at all events, from the present period commences that series of shameful acts which blacken the great philosopher's memory. By the queen's desire he appeared as counsel against his friend, and, as if this alone was not sufficient, he strove to secure a conviction by means perfectly unjustifiable from their unfairness and dishonesty. Bacon's benefactor was executed ; and then, to turn the current of popular opinion which ran strongly in Essex's favor, Bacon having before so well proved his zeal in pressing charges affecting his friend's life, was now desired to direct his talents against his friend's fame : 'A declaration of the practices and treasons attempted and committed by Robert, earl of Essex,' accordingly appeared from his pen !

In 1592 Bacon was returned member for Middlesex. Upon the accession of James, in 1603, his prospects greatly improved. He had used his utmost address to impress the monarch with a favorable opinion of him, whilst Elizabeth was yet alive, and he was successful. Whatever James might be in other respects, he certainly appreciated Bacon's wit, learning, and genius. The first mark of favor was the honor of knighthood. Bacon's reasons for desiring this honor are amusing : he was the only untitled person in his mess at Gray's Inn, and he had "found an alderman's daughter, a handsome maiden, to his liking," whom soon after he married. Other honors followed. He was appointed king's counsel in 1604, solicitor-general in 1607, attorney-general in 1612, and he was now evidently determined to let no lack of zeal in the service of the "powers that be" prevent a still further advancement. An aged clergyman, named Peachum, was apprehended for having in his possession a written sermon containing passages of, as it was alleged, a treasonable nature. It was desired to punish him, but neither the facts nor the law were sufficient to meet the case fairly. Bacon undertook to get rid of the first difficulty by torturing the prisoner ; of the second, by tampering, *beforehand*, with the judges. In the last only he succeeded, for Peachum had, as Bacon complained to the king, "a dumb devil." The poor old man was however tried, convicted, and sentenced to death ; but for very shame the court felt compelled to restrain its desire for his execution. So the poor but brave old man languished the little remainder of his days in prison. The friendship of Buckingham, the king's favorite, now helped to smooth Bacon's way to the highest offices. In 1617 he was appointed the keeper of the great seal, and in the following year lord high chancellor. His ambition had now obtained all that it had desired. Most enviable appeared his lot to the eyes of the world. He now lived at York House, the place of his birth, and there it was that in 1620 he celebrated his sixtieth birth-day with the greatest magnificence, and in the midst of a splendid circle of friends. Ben Jonson, who was there, wrote some of the happiest of his panegyrical rhymes on the occasion. All things, he says, seemed to smile about the old house, "the fire, the wine, the men ;" and the

scene altogether impressed him so greatly that he thus speaks of Bacon and his state :—

"England's High Chancellor, the destined heir,
In his soft cradle, to his father's chair,
Whose even thread the fates spin round and full
Out of their choicest and their whitest wool."

During all these events, his literary reputation had been steadily growing. His Essays were published in 1596 ; 'The Advancement of Learning,' in 1605 ; 'The Wisdom of the Ancients,' in 1610. Other works had also appeared, and shortly after his elevation to the chancellorship was sent forth 'The Organon,' which justified the boasts of his youth, that it should be "the greatest birth of time," and on which he had spent his leisure hours from that time upwards till its final completion in his old age. To return to what we may call his worldly history : he had been by this time raised to the rank of Viscount St. Alban's, and there closes the course of his prosperity.

In 1621 James found himself compelled from want of money to assemble a parliament for the first time for six years. It was a period of great dissatisfaction. Many grievances were complained of by the people, and their representatives were determined to examine into the matter thoroughly. They did so ; and, in the course of their labors, resolved to inquire into the state of the courts of law. A committee was appointed, and on the 15th of March of the very year which had witnessed the publication of the book that was destined, more than any other of his publications, to work an entire revolution in philosophy, Bacon was publicly charged with corruption in his high office. One of the cases brought forward will show the nature of the whole. A gentleman of the name of Aubrey, having a suit depending in Chancery, and being almost ruined by expenses and delays, was advised by some hangers-on of the chancellor to make him a present. He obtained with great difficulty a hundred pounds from a usurer, which was given to his lordship, Aubrey being at the same time assured by some of the chancellor's dependants that all would go right. "A killing decree," however, was pronounced against him, and in his despair the unfortunate man exposed the whole. Numerous cases of a similar or worse description were also substantiated, until Bacon wrote to the peers, as they were pursuing the inquiry, and confessed their general truth. A still more direct admission was demanded and obtained, and then a committee of the House waited upon the chancellor at York House, where he was enduring all the agonies of the eternal shame he saw he had brought upon his head : their object was, to be sure that he had really signed the confession. "My Lords," said the broken-hearted man, "it is my act, my hand, my heart. I beseech your lordships to be merciful to a broken reed." He was sentenced to pay a fine of £40,000, to be confined in the Tower for life, and rendered incapable of holding any office or of sitting in parliament. He was, however, soon released from the Tower, with orders to banish himself from the court, and ultimately every part of the sentence was remitted.

We now follow him to Gorhambury, the magnificent seat of his father, the home of a considerable portion

of his boyhood, and which was now to be the resting place of his old age. During all the bustle and splendor of office, he had frequently found means to escape to the quiet and meditation which there awaited him, and for the better enjoyment of such opportunities, he built, about half a mile from Gorhambury, a house which cost him ten thousand pounds. There he now endeavored to alleviate the anguish which preyed upon his heart, by collecting around him some of the most distinguished of the many friends which not even his disgrace had alienated, and who were most proud of the office which he sometimes imposed upon them of writing to his dictation. Hobbes, a scarcely less distinguished name in philosophy, then a young man, was often employed in this way. Bacon never again entered into public life, but continued to the very day of his death to occupy himself in his literary and philosophical labors. The great apostle of experimental philosophy was destined to be its martyr. It had occurred to him that snow might be used with advantage for the purpose of preventing animal substances from putrefying. On a very cold day, early in the spring of the year 1626, he alighted from his coach near Highgate, in order to try the experiment. He went into a cottage, bought a fowl, and with his own hands stuffed it with snow. While thus engaged, he felt a sudden chill, and was soon so much indisposed that it was impossible for him to return to Gray's Inn. The Earl of Arundel, with whom he was well acquainted, had a house at Highgate. To that house Bacon was carried. The Earl was absent, but the servants who were in charge of the place showed great respect and attention to the illustrious guest. Here, after an illness of about a week, he expired early in the morning of Easter-day, 1626. His mind appears to have retained its strength and liveliness to the last. He did not forget the fowl which had caused his death. In the last letter that he ever wrote, with fingers which, as he said, could not steadily hold a pen, he did not omit to mention that the experiment of the snow had succeeded "excellently well." In his will he wrote: "For my burial, I desire it may be in St. Michael's Church, St. Alban's: there was my mother buried, and it is the parish church of my mansion-house of Gorhambury, and it is the only Christian church within the walls of Old Verulam. For my name and memory, I leave it to men's charitable speeches, to foreign nations, and the next ages." He was of course buried where he desired; his faithful friend and secretary, Sir Thomas Meautys, erected a monument to his memory, and, when he died, was himself buried at the feet of the illustrious man he had so loved and honored.

According to the views of the author of the eloquent essay from which we have just been quoting—an essay on Bacon's Life and Philosophy, which should be bound up with every edition of his works—the chief characteristic of that philosophy was its direct antagonism to all that had previously existed under the same name. "The ancient philosophy disdained to be useful, and was content to be stationary. It dealt largely in theories of moral perfection, which were so sublime that they never could be more than theories." Bacon's, on the contrary, was essentially a philosophy

of utility and progress—he thought the 'fruit' of more consequence than the leaves and flowers; he desired to multiply human enjoyments, to mitigate human suffering, to improve man's estate. And hence it is that he is justly regarded as the author of modern philosophy; that from the day of his death his fame has been progressively increasing, and will doubtless continue so to do, until he is recognised in every age and country as one of the most illustrious benefactors of the human race.

MAXIMS.

NEVER, unless you are an expert horseman, attempt to show off a spirited animal before your friends, else you may be made to kiss the dust; for the horse is a sagacious brute, and soon discovers the incapacity of his rider. Never sign an accommodation bill, for when once "on the ice," it is impossible to predict the result. Never laugh at your own jokes, at least until the risibility of the company has been excited, when etiquette may perhaps permit you to give a gentle guffaw by way of accompaniment. Never, in talking to your next neighbor, vociferate as if you were "hailing a ship at sea;" it is the custom of uneducated boors, with whom you stand a chance of being identified. Never condemn your neighbor unheard, however many the accusations which may be preferred against him: every story has two ways of being told, and justice requires that you should hear the defence as well as the accusation; and remember that the malignity of enemies may place *you* in a similar predicament. Never, if you are in the habit of giving recitations, allow yourself, from the indiscreet and hyperbolic encomiums of friends, to suppose that you are a Roscius; and keep in mind that you may be flattered to be laughed at. Never get into a passion because others will not agree with you in opinion; you are not infallible, and moreover, diversity of opinion is the very life and soul of conversation; at the same time, we confess there are some dogmatists who never speak "rhyme nor reason," and who sadly try the temper. Never trouble others with the recital of your misfortunes: communications of this description are never pleasing; and, at all events, sympathy cannot counteract the decrees of fate; and, moreover, if you are given to such disclosures, you will be dubbed "knight of the rueful countenance"—a personage who is no favorite at convivial meetings, or, indeed, any where. Never refuse, if it be in your power, to aid the unfortunate; a generous act is always followed with a glow of happiness, far surpassing any mere animal gratification. Never harbor animosity towards a friend for a mere hasty expression; forgiveness is a godlike quality, and a true friend is so scarce a commodity, that he should not be repudiated on slight grounds; but those who injure you from "malice prepense," should be shunned as you would avoid a tiger.

ANCIENT CHURCHES OF ENGLAND,
No. II.



VIEW OF STEPNEY CHURCH.

The parish church dedicated to St. Dunstan and All Saints, is a large Gothic structure of the early part of the thirteenth century, consisting of a chancel, nave, and two aisles, separated by clustered columns and pointed arches. At the west end is a square tower, containing a fine tenor bell, the gift of Nicholas Chadworth, date unknown, but renewed by Thos. Marston, in 1386, and recast again in 1764. The windows are various, but for the most part of

the architecture which prevailed in the fourteenth century. Those in the north aisle have obtuse arches of a later date. In the south wall of the chancel are two stone stalls with pointed arches. On the north side is a marble monument with a groined elliptical arch, under which stands an altar-tomb to the memory of Sir Henry Colet, Knight, Citizen, and Silkmercer of London. Sir Henry was Lord Mayor in 1486, and again in 1495. He was third son of Robert Colet, Esq., and father of Dr. John Colet, founder of St. Paul's School. This tomb is kept in good repair by the Mercers' Company. On the



north wall are several monuments, the most notable of which is that of Sir John Berry, surmounted by a fine bust in white marble of that gallant officer, who, by his daring exploits, gained the distinguished consideration of his Sovereign, the Merry Monarch. On the east wall, among a host of burly citizens, with their kneeling wives and daughters, we perceive the monument, erected in 1622 by the Corporation of the Trinity House, to the good old knight, Sir Thomas Spert, Comptroller of the Navy to Henry VIII., and first master of that ancient and honorable fraternity. There are also a profusion of monumental memorials on the chancel floor, but none requiring special notice in our brief sketch. The font, which is a genuine antique, and of exquisite workmanship, stands on a circular pillar, surrounded by four others of smaller size. Norden mentions, as worthy of note, the tomb of William Chaldnam, erected in 1484; but that, as well as the monument of Lord Darnley, who died in 1545, which Weever mentions as having stood within the chancel, has disappeared. He was elder brother of the Earl of Darnley who married Mary Queen of Scots, and was father of James I. On the outside of the church, over the porch, is a representation of the Crucifixion, rudely carved; and on the west wall an imperfect *basso relievo* of a figure adoring the infant Jesus.

The above is a very old piece of sculpture on the building, and seems properly to belong to some much more ancient edifice.

In the wall of a small porch there is a stone which thus touchingly moralizeth its travels—

"Of Carthage wall I was a stone:
O mortals, read with pity!
Time consumes all—it spareth none—
Man, mountain, town, or city.
Therefore, O mortals, now bethink
You whereunto you must,
Since now such stately buildings
Lie buried in the dust."

Here lieth a lady who seems to have done the state some service: Mrs. Goodlad, aged 99, with her 20 daughters. And here, also, Wolsey's favorite ambassador, Bishop Kyte, found his last resting-place, shortly after his return from

"Spain, where he right joyfully
Combined both princes in peace most amate."

Here lieth, also, a man who made some noise in his day—

"Roger Crab, that feeds on herbs and roots, is here;
But I believe Diogenes had better cheer."
Rara avis in terris.

As a striking instance of mortality, scarcely to be paralleled in the records of any other parish in the kingdom, it appears by the register that 154 persons were buried here on the 11th Sept., 1665, the year of the destructive plague.

We have left much unnoticed of this fine old church, which, notwithstanding all the centuries which have passed over it, still looks

"As if time had been to it all sunlight and soft dew;
As if upon its freshness the cold time
Of decay should never fall."

ALMANACKS.

AN Almanack is a well-known annual publication, either in a single sheet or in the form of a book, in which the revolution of the seasons, the remarkable days, the rising and setting of the *Sun*, *Moon*, their Eclipses, the motions of the Planets, and many other interesting particulars are noted for the ensuing year.

The word is supposed to be of Arabic origin, but whether it be from *al* and *manach*, to count, or *al* and *men*—months, or *manakos*, the course of the months, is not agreed: some give it a *Teutonic* origin, from the words *al* and *moan*, the moon: each of these conjectures is plausible.

As the ARABS were greatly addicted both to *Astronomy* and *Astrology*, it is highly probable, that both the thing and the name originated with them. But the first *Almanack* that ever appeared in Europe, was published in 1474, by a learned Professor of *Konigsberg*, whose assumed name was *Regiomontanus*; it was nearly in the same form in which they now appear, giving the regular Calendar, the Eclipses, motions of the Planets, &c. The number published in Great Britain is at present very great, of which the most popular was that entitled *Moore's*, chiefly on account of its pretended prognostics of future events, to which many weak persons give implicit credit.

The largest impressions of any single book, perhaps, were those of *Moore's Almanacks*. It is said that during the American War, when popular excitement was high in England, this Astrological portender of events was in vogue to an astonishing extent, its circulation being nearly 480,000 copies per annum: The company of Stationers, many years ago, determined to administer no longer to this gross credulity, and to omit the *predictions*, when the sale fell off one-half, and a prognosticator, one Wright of Eaton, published another, and sold 60,000. In self-defence the company had again to print the work with all its original absurdities, and accordingly engaging one Andrews of Royston for this department, their sale rapidly recovered its original numbers;—it is due to the improved intelligence of the age, however, to add, that works of a superior character now take the lead. Until within a few years since, when the stamp duty was taken off Almanacks, this work produced an immense revenue to the stamp office, the rate of duty being at 1s. 3d. per copy, while the price to the public was 2s. 6d.; it is now sold at 6d. At the present day Almanacks are to be had in London as varied as the inventive wits of their ingenious fabricators can make them—even down to those of a circular form which some carry in the crown of their hat.

In 1767, commenced the publication of the *Nautical Almanack*, under the direction of the British Commissioners of Longitude. It contains the usual Calendar, and many additional and useful particulars, more especially the distances of the *Moon* from the *Sun*, and fixed stars, for every three hours of apparent time, adapted to the meridian of Greenwich; by comparing which with the distances carefully observed at sea, the mariner may readily infer his longi-

tude to a degree of exactness that is found sufficient for most nautical purposes.

OF THE ORIGIN OF THE DIVISION OF TIME.

Before the death of JACOB, which happened 1689, B. C., we find that several nations were so well acquainted with the revolutions of the *Moon*, as to measure by them the duration of their year. It had been a universal custom among all nations of antiquity, as well as the Jews, to divide time into a portion of a *week*, or *seven days*; this undoubtedly arose from the tradition with regard to the origin of the world. It was natural for those nations, who lived a pastoral life, or who lived under a serene sky, to observe, that the various appearances of the moon were completed nearly in four weeks; hence, the division of a *month*. Those people again who lived by agriculture, and were acquainted with the division of a month, would naturally remark, that twelve of these brought back the same temperature of the air, or the same seasons; hence the origin of what is called the *lunar year*, which has everywhere taken place in the infancy of science. This, together with the observations of the fixed stars, (which we learn from the book of *Job*, who, according to the best writers, was contemporary with *Jacob*,) must have been very ancient, and naturally paved the way for the discovery of the *solar year*.

OF THE ROMAN CALENDAR.

The Roman Calendar was imposed by ROMULUS, the founder of Rome, about 716 B. C., who divided the year into *ten* months, the first of which was *March*, then *April*, *May*, *June*, *Quintil*, afterwards called *Julius*, and *Sextil*, afterwards called *August*; then *September*, *October*, *November*, and *December*.

To *March*, *May*, *Quintil*, and *October*, he gave each 31 days, and 30 to each of the other *six*, making together 304 days. NUMA POMPILIUS, second king of Rome, about 669 B. C., reformed this Calendar, and imitated the Grecians, to allow the year twelve lunar months of *thirty* and *twenty-nine* days each, alternately, which made the year 354 days.

NUMA would have the month of *January*, which he placed at the winter solstice, to be the beginning of the year, and not *March*, which ROMULUS placed at the equinox of the spring. The months added by NUMA were *January* and *February*.

The confusion and disorder which was occasioned by this division of the year, was so great in the time of JULIUS CÆSAR, that after the battle of *Pharsalia*, which happened B. C. 48, he looked upon the reformation of the *Calendar* as not unworthy his attention. Accordingly, he sent for the famous astronomer SOSIGENES, from *Alexandria*, who ordered the year according to the course of the *Sun*, and composed a Calendar of 365 days, leaving out the six hours to form a day at the end of every fourth year, which day was to be inserted in the month of *February*, after the 24th of that month, which the Romans, according to their way of counting, called the 6th of the Calends. The difference of time, at the period of the reformation, was no less than *ninety* days: the next year, therefore, was constituted of *fifteen*

months, or 444 days, and was called the "*Year of Confusion*." This reformation was made *forty-five* years B. C., and was introduced the year following. In this form did the Calendar and account of time stand till the introduction of the *Gregorian Calendar*.

When the Romans give us any date to their historical facts, they always reckon from the building of the city of Rome, and this is generally accompanied with the names of the consuls of that year. Rome was built 753 years B. C.

The Romans had a peculiar manner in reckoning the days of their months. They proceeded in a retrograde order, and which to us has an awkward appearance. Each month had *three* remarkable days; namely, the *Calends*, *Nones*, and *Ides*, which broke the months into three unequal divisions.

The *CALENDS* were the first days of every month; and in the months of *March*, *May*, *July*, and *October*, the *NONES* were on the 7th, and the *IDES* on the 15th; and in all the other months the former on the 5th, and the latter on the 13th.

All the other days belonged to some one of these divisions, and were reckoned in the following manner; as—

The 1st of April, for instance, the *Calends* of April; the 31st of March, the day before the *Calends* of April; the 30th of March, the 3d of the *Calends* of April; the 29th, the 4th; and in this manner re-treating backward, till we arrive at the 15th of March, which is the *IDES* of March; the 14th, the day before the *Ides*; the 13th, the 3d; and so backward till we come to the 7th, which is the *NONES* of March; the 6th—the day before the *Nones*, and so on till we come to the *Calends*.

THE NAMES GIVEN TO THE MONTHS BY THE ROMANS.

JANUARY, the first month, was so called from Janus, an ancient king of Italy, who was deified after his death, and is derived from the Latin word *Januarius*.

FEBRUARY, the second month, is derived from the Latin word *Februo*, to purify, hence *Februarius*; for in this month the ancient Romans offered up expiatory sacrifices for the purifying the people.

MARCH, the third month, anciently the first month, is derived from the word *Mars*, the god of war.

APRIL is so called from the Latin *Aprilus*, i. e., opening; because in this month the vegetable world opens and buds forth.

MAY, the fifth month, is derived from the Latin word *Majores*, so called by Romulus in respect to wards the Senators: hence *Maius*, or *May*.

JUNE, the sixth month, from the Latin word *Junius*, or the youngest sort of the people.

JULY, the seventh month, is derived from the Latin word *Julius*, and so named in honor of Julius Cæsar.

AUGUST, the eighth month, was so called in honor of Augustus, by a decree of the Roman Senate, A. D. 8.

SEPTEMBER, the ninth month, from the Latin word *Septem*, or seven, being the seventh month from March.

OCTOBER, the tenth month, from the Latin word *Octo*, the eighth; hence *October*.

NOVEMBER, the eleventh month, from the Latin word *Novem*, nine, being the ninth month from March.

DECEMBER, the twelfth month, from the Latin word *Decem*, ten; so called because it was the tenth from March, which was anciently the manner of beginning the year.

THE JEWISH COMPUTATION OF TIME.

The first division of the day was into morning, noon, and night; and these are the only parts of a day mentioned in the Old Testament. But it is, however, probable that men of science had other more accurate divisions, because we find they had *sun-dials*. Afterwards they divided their days into twelve hours; and to this division our Saviour refers when he says, "Are there not twelve hours in the day?" But their hours must have been of different lengths, at different seasons of the year; for their hour was a twelfth part of the time the sun continues above the horizon. And as this time is longer in summer than in winter, their summer hours must therefore have been longer than their winter hours. This difference, however, would not be so very sensible in that country as here, as Judea is much nearer to the equator than we are, and the days there, in consequence, nearer equal. Their hours were computed from sun-rise; their *third hour* divided the space between sun-rising and noon; the *ninth hour* divided the space between noon and sun-set. But in the New Testament, we find that they sometimes made use of the Roman reckoning of their hours.

The Roman reckoning was the same as ours, beginning at midnight, and reckoning to noon, twelve hours; and again from noon to midnight.

The Hebrews divided their night into four watches of three hours each. The *first* from six to nine in the evening; the *second* from nine to twelve; the *third* from midnight to three in the morning; and the last to six or sun-rising.

THE MOHAMMEDAN YEAR.

The Mohammedan Year consists of twelve lunar months, each containing 29 days, 12 hours, and 792 scruples;* so that the year contains 354 days, 8 hours, and 864 scruples. In order to reduce this year to an integral number of days, a *cycle*† of thirty was chosen as the most convenient period; because thirty times eight hours, and 864 scruples, amount exactly to eleven days; and in this cycle there are nineteen years of 354 days, and eleven of 355 days.

The Mohammedan Hegira commenced on Friday, the 16th of July, A. D. 622: and the 538th year of the Hegira began Friday, July 16th, which is the same day of the month and week that the Hegira commenced; and this corresponds to the year of our Lord 1143; so that 521 of our years are equal to 537 Turkish years.

THE CHINESE CALENDAR.

The Chinese divide the night and day into twelve equal parts, beginning their reckoning from midnight. Hence their hours are double the length of ours.

* 1,080 scruples make one hour.

† *Cycle*, a term in chronology, is a certain period or series of years, which regularly proceed from the first to the last, and then return again to the first, and circulate perpetually. The cycle of the sun consists of twenty-eight years; of the moon, nineteen years; the Roman indiction, fifteen years.

The common Chinese year consists of twelve lunar months, and their intercalary year has thirteen. Their months have no subdivision; that is, they have no weeks. Their common way of dating is by the day of the month, and the year of the reigning emperor. As for example, they say *fifth* of the sixth *Moon*, in the twelfth year of Kia-king. They have a cycle of sixty years; but this is made use of only in books, and by the literati. The cycle of nineteen years is used by those who regulate the calendars. The moon with which their year commences, is that which falls nearest to the fifteenth degree of *Aquarius*, corresponding to the third or fourth of February. The Chinese date the commencement of their spring, the instant the Sun enters this degree; when they wish each other a happy new year, and say, "The spring is begun; I give you joy."

The Chinese have no particular days for religious worship. Their great festival is the first of the year, on which day they shut up their shops, dress in their best clothes, and pay visits; a custom also observed in some parts of our own country.

THE WINTER SLEEP OF ANIMALS.

Where do you lurk, ye houseless commoners,
When bleak November's sun is overcast;
When sweeps the blast fierce through the deepest groves,
Driving the fallen leaves in whirling wreaths;
When scarce the Raven keeps her bending perch,
When dashing cataracts are backward blown?

"LET bleak Winter sternly come," let dearth and famine follow in his iron train, they can do no harm, for all the weaklings of the animated world, led by an analogous instinct, have in various ways sunk into protracted slumbers; and the weary land rests for a season from her reproductive labors. The lizard, the hedgehog, the badger, the mole, the dormouse, and many other animals, are now securely housed in comfortable chambers in the earth, and will remain in a torpid state till the spring. Frogs have sunk to the bottom of their native pools, and lie buried in the mire. Bats, hanging by their hind feet, and warmly wrapped in the membranes of their fore feet, sleep in the upper corners of old barns, deserted buildings, and the sides of caves. Squirrels, rats, and field-mice rest in a state of *partial* slumber, which has been called "*quiescence*," to distinguish it from perfect torpidity; but when a warm day spreads new life along their drowsy nerves, they peep forth from their dormitories, and acquiring from the genial air a temporary appetite, they withdraw to their stores, and feed, till the evening cold again folds them in the arms of "tired nature's sweet restorer, balmy sleep." What a beautiful ordination! that God should lead the partial sleepers to provide food for their waking hours, without which they would infallibly perish; and that the torpid sleepers, having no need, should make no provision. Reptiles of all kinds retire to suitable places of refuge; the tortoise to its earthen hole, the toad to its muddy canopy, and the snake to

the forest holes,—each obeys the irresistible impulse, and becomes torpid. Snails, and thousands of their testaceous brethren, led by God's beneficent hand—yes, proud man—you may neglect your offspring, and despise the poor, but God will not, cannot, forget his creatures! He who made the snail, leads it, on the approach of winter, to the warm angle of a branch, or the snug corner of the farmer's fence, and then teaches it to form a lid for the mouth of the shell, by which, also, it adheres to its hiding-place, and shuts out all access to the freezing air. River fishes, and even some of the sea fishes, in the absence of food, sleep away their wants by torpidity. Insects, also, obey the same wise law; spiders may now be found apparently dead, rolled up in a shroud of web, but reviving upon the application of warmth; the common house fly may sometimes be revived in the same manner. Myriads of torpid beetles may be met with, in places wonderfully adapted to their constitution, mode of life, and local necessities. The pupa of almost all the butterflies may be found in the crevices of bark, on the underside of bush-twigs, or buried deep in the earth; some exposed, but others wrapped in costly garments of silk. A few larvæ may also be discovered, such as the Stag-beetle, Cockchafer, Dragon-fly, Goat-moth, &c. &c., each with an appropriate hybernacula. Many surprising instances of God's care for his creatures are at this time discoverable in the modes in which the eggs of insects are preserved from the cold; some deposited by the parent, *who never knew cold*, deep in the earth, beyond the reach of frost; others, placed by those *who never saw a leaf fall*, on the twigs and branches, and never on the unstable leaves; and these, also, often covered with a thick layer of water-proof varnish, or the down from the mother's body.

Thus, when the earth is a barren desert, and the "*staff of life fails*," are these interesting beings preserved like the corn-blade beneath a mantle of snow, to flourish again in times when God, by his plenitude, shall add pleasure to existence. If, therefore, our heavenly Father condescends in this way to "temper the wind to the shorn lamb," shall we be tardy in uplifting the shield of charity, and by a free but prudent dispensation of his gifts, deprive the northern blast of its bitterness, that instead of starving groans, it may waft the blessings of the grateful poor to heaven.

IF in the heat of summer we descend into a cave, we are sensible that we are surrounded by a cold atmosphere; but if in the rigor of a frosty winter we descend into the same cave, we are conscious of the presence of a warm atmosphere. Now a thermometer suspended in the cave, on these occasions, will show exactly the same temperature; and, in fact, the air of the cave maintains the same temperature at all seasons of the year. The body, however, being, in the one case, removed from a warm atmosphere into a colder one, and in the other case, from a very cold atmosphere into one of a higher temperature, becomes, in the latter case, sensible of warmth, and in the former, of cold.



a, Spaniel ; b, Fox-Hound ; c, Pointer ; d, Lurcher ; e, Newfoundland ; f, Shepherd's Dog ; g, Talbot Hound ; h, Blood-Hound.

DOGS.

THE Spaniels form a distinct group of the present section. Among them we include the pure setter. The spaniels are remarkable for docility and an affectionate disposition, and these good qualities, combined with their beauty, render them general favorites. The fur is long and silky, sometimes curled or crisped ; the ears are large and pendent, and the expression of the countenance is pleasing and intelligent. All possess an excellent scent, and especially the setter, the qualities of which are well known to the sportsman.

The water-spaniel belongs to this group ; its utility to persons engaged in the pursuit of water-fowl is ex-

tremely great ; it swims well, is very hardy, and is an excellent retriever, bringing the birds which have been shot on the water to its master. The French poodle may be referred to the spaniels. It is, we consider, very nearly allied to the rough water-dog figured by Bewick, the grand barbet of Buffon (whose figure, indeed, Bewick has copied), and of which the petit barbet of Buffon is a smaller variety.

The rough water-dog is a most valuable and intelligent animal. It is robustly made, and covered universally with deep curly hair. It exceeds the water-spaniel in size and strength, but has the same aquatic habits and docility. It is much used as a retriever by the shooters of water-fowl. No dog is

more easily taught to fetch and carry than this ; and its memory is surprising. If any small article be shown it, and put into a certain place, this dog, after the lapse even of several days, or when at considerable distance from the spot, will, when bidden, hasten to it, search out the article, and return with it to his master. Mr. Bell relates an anecdote of one of these dogs finding a piece of money which its master had lost, and retaining it for a whole day in its mouth, till its master's return, when it joyfully laid the coin at his feet. During the whole of the time it had taken no food, from unwillingness to part, even for a few minutes, with the property of which it deemed itself the guardian.

It is impossible for us to enter into an enumeration of all the breeds of spaniels ; we may notice, however, the Marlborough and King Charles breeds, which, from their beauty and liveliness, are in the highest esteem. In all essentials there is a close similarity among the dogs of this group, and the differences consist rather in size than in any other characteristics. Naturalists have been inclined to regard the Newfoundland, the Labrador, and the Alpine dogs, as true spaniels. We do not consider this opinion as correct. They form a little group by themselves, and in many points the Alpine, or Mount St. Bernard's dog, approaches to the mastiff. We have seen several fine examples of this breed ;—their size is equal to that of the largest mastiff ; the muzzle is deep ; the ears are pendulous ; the fur is rather long and wiry ; the eye is full and very expressive ; and the form of the body and limbs indicates great strength. The peculiar robustness of form, and especially the depth of the muzzle, and character of the fur, serve to distinguish this noble dog from the largest of the spaniels. The Labrador dog, often called Newfoundland, presents the same general features, excepting that the fur is longer and softer, and sometimes disposed to curl. A fine dog of this breed brought from Labrador gave us the following admeasurements :—total length, including tail, six feet three inches ; height at shoulder, two feet six inches ; length of head, from occiput to point of nose, eleven inches ; circumference of chest, three feet one inch. In Labrador these powerful and intelligent dogs are used for drawing sledges loaded with wood, &c., and are of great service to the settlers. The Newfoundland dog is essentially the same as the Labrador, but, if our observations be correct, it does not attain to so large a stature. Of the extraordinary sagacity of the dogs of this group,—of the courage and intelligence of the Mount St. Bernard's dog,—of the fidelity, usefulness, and aquatic propensities of the Labrador and Newfoundland breed, nothing need be said. All are familiar with instances in which human beings have owed their life to the exertions of these devoted creatures ;—all are acquainted with their noble qualities.

Another distinct group of dogs belonging to the present section is that which contains the hounds. Several varieties of hound now exist ; and of these the beagle, the harrier, and the foxhound are familiar to all our readers. No country equals England in the swiftness, spirit, and endurance of its hounds ; and in no country is so much attention paid to the various breeds, espe-

cially to the harrier and foxhound. The beagle was formerly a great favorite, but is now little used. It is of small stature, but of exquisite scent, and its tones, when heard in full cry, are musical. It has not, however, the strength or fleetness of the harrier, and still less so of the foxhound ; and hence it does not engage the attention of the sportsmen of the modern school, who, unlike Sir Roger de Coverly, are impetuous in the field, preferring a hard run to a tame and quiet pursuit. The beagle was only employed in hunting the hare, as is the harrier, but the foxhound is trained both for the deer and the fox. The strength and powers of scent of the foxhound are very great, and many astonishing instances of the energy and endurance of these animals are on record.

Formerly two noble varieties of the hound were common in England, which are now seldom seen. We allude to the old English hound, or talbot, and the blood-hound.

Of the old English hound, which is described by Whittaker, in his 'History of Manchester,' as the original breed of our island, we some years since saw a fine specimen in Lancashire. It was tall and robust, with a chest of extraordinary depth and breadth, with pendulous lips, and deeply-set eyes ; the ears were large and long, and hung very low ; the nose was broad, and the nostrils large and moist. Its voice was deep, full, and sonorous. The general color was black, passing into tan or sandy-red about the muzzle and along the inside of the limbs. Shakspeare's description of the hounds of Theseus, in the 'Midsummer Night's Dream,' is true to the letter, as referring to this breed, with which he was, no doubt, well acquainted :—

" My hounds are bred out of the Spartan kind,
So flew'd, so sanded ; and their heads are hung
With ears that sweep away the morning dew ;
Crook-kneed and dewlapp'd like Thessalian bulls ;
Slow in pursuit, but match'd in mouth like bells
Each under each."

It was with hounds of this breed that "to hunt the deer" "Earl Persie took his way ;" and it was with these dogs that our ancestors chased the larger kinds of game, with which, when England was almost one vast forest, the country abounded. For delicacy of scent and acuteness of hearing they were unrivalled, and their great power rendered them a match even singly for the strongest of their 'quarry.'

The blood-hound, with equal delicacy of scent, has shorter ears, and a taller and perhaps lighter figure than the talbot. This celebrated dog was once in great request, and was employed by our ancestors, not only in the pursuit of game, but of men. Laid on the track of the felon or marauder, it kept up a steady persevering chase, and was not baffled without difficulty. Sir Walter Scott, in his graphic description of the "stark moss-trooper," Sir William of Deloraine, gives as a proof of his merit, that he

" By wily turns and desperate bounds
Had baffled Percy's best blood-hounds."

And the same accomplished knight thus eulogizes his dead enemy :—

" 'Twas pleasure as we look'd behind
To see how thou the chase would wind—
Cheer the dark blood-hound on his way,
And with the bugle rouse the fray."

Blood-hounds, or, as the Scotch called them, Sleuth-hounds, were kept at one time in great numbers on the Borders; and fugitive kings, as well as moss-troopers, were often obliged to study how to evade them. Bruce, it appears, was repeatedly tracked by these dogs, and on one occasion only escaped by wading for a considerable distance up a brook, and thus baffling the scent. "A sure way of stopping the dog was to spill blood upon the track, which destroyed the discriminating fineness of his scent. A captive was sometimes sacrificed on such occasions. Henry the minstrel tells a romantic story of Wallace, founded on this circumstance. The hero's little band had been joined by an Irishman named Fawdon, or Fadzean, a dark, savage, and suspicious character. After a sharp skirmish at Black-erne Side, Wallace was forced to retreat with only sixteen followers. The English pursued with a border blood-hound. In the retreat, Fawdon, tired, or affecting to be so, would go no farther; Wallace having in vain argued with him, in hasty anger struck off his head, and continued the retreat. When the English came up, their hound stayed upon the dead body." (*Notes to the 'Lay of the Last Minstrel.'*)

The specimens of this dog which we have seen were of a sandy-red color with black muzzles.

We have hitherto said nothing respecting the pointer. The old Spanish pointer is decidedly related to the hound, and the breed now generally used by sportsmen is originally from this source; but as the fox-hound is rendered by assiduous cultivation lighter, smaller, and more fleet than the talbot (its origin, as we presume), so the modern pointer may be regarded as a lighter and more active branch of the heavy slow Spanish pointer, which indeed is now seldom seen.

We may conclude our present section with the terrier and its varieties. Two breeds of this spirited and well-known dog are common: one, called the Scotch terrier, is covered with rough wiry hair, and having short legs and a long body; the other, called the English terrier, is sleek, with longer legs and a more elegant form; its color is black, with tanned limbs, and a tanned spot over each eye. In both the muzzle is moderately long and sharp, and the ears are erect; the eye is quick; the power of smell acute. For unearthing the fox or badger, and for worrying rats and "such small deer," these dogs are celebrated, and they make excellent house-guards.

The turnspit, a variety now seldom seen, is allied most nearly to the terrier, but it is destitute of the boldness and spirit of that breed. It is long-bodied, with short bowed legs and a curled tail, and the iris of one eye is often of a different color from that of the other.

In taking a review of the dogs to which we have directed our attention, as comprising the present section, we cannot fail to observe that they are endowed respectively with qualifications or habits certainly not innate, but the result of education, at least originally, which education, continued through a series of generations, has produced permanent effects. For example, no dog in a state of nature would point with his nose at a partridge, and then stand like a statue, motionless, for the dog would gain nothing by such a pro-

ceeding. Man, however, has availed himself of the docility and delicacy of scent peculiar to a certain breed, and has taught the dog his lesson, and the lesson thus learned has become second nature. A young pointer takes to its work as if by intuition, and scarcely requires discipline. Hence, therefore, must we conclude that education not only effects impressions on the sensorium, but transmissible impressions, whence arise the predispositions of certain races. Education, in fact, modifies organization; not that it makes a dog otherwise than a dog, but it supersedes, to a certain point, instinct, or makes acquired propensities instinctive, hereditary, and, therefore, characteristics of the race. The effect of this change of nature is not to render the dog more independent, not to give it any advantage over its fellows, but to rivet more firmly the links of subjection to man.

It is not to the pointer alone that these observations apply; all our domestic dogs have their own acquired propensities, which, becoming second nature, make them, in one way or another, valuable servants. No one, we presume, will suppose that the instinctive propensities implanted by nature in the shepherd's dog make it not a destroyer but a preserver of sheep. On the contrary, this dog, like every other, is carnivorous, and nature intends it to destroy and devour. But education has supplanted instinct, to a certain point, and has implanted a disposition which has become an hereditary characteristic, and hence a shepherd's dog of the true breed takes to its duties naturally. But a shepherd's dog could not, delicate as its sense of smell is, be brought to take the place of the pointer in the field, even though it were subjected to training from the earliest age; nor, on the other hand, could a pointer be substituted with equal advantage in the place of a shepherd's dog, as the assistant of the drover. Each is civilized, but in a different style, and education has impressed upon each a different bent of mind, a different class of propensities.

CHARACTER OF MODERN KNOWLEDGE,

WITH HINTS FOR ITS IMPROVEMENT

THE present times are, without doubt, distinguished for the diffusion of knowledge amongst all ranks of the people. Whatever may be the advantages which we are already reaping from the progress of enlightenment, it is not to be expected that so great a change should be altogether free from the inconveniences and evils which seem necessarily to attend all changes. The consistent upholder of things as they are, to the exclusion of all alteration, is wont to enumerate evils arising from the increasing spread of knowledge, sufficient in his estimation far to overbalance all its advantages. It is the part of the prudent and judicious advocate of improvement seriously to consider such inconveniences as may arise, and carefully to provide for their mitigation at least, if they do not admit of prevention. Of the numerous evils alleged as consequences of modern attempts to spread abroad those stores of information formerly appropriated by the few, one of the most serious, and

best worthy of consideration, appears to us to be the supposed superficial character of modern, as contrasted with ancient knowledge. In our desire to extend our acquaintance with science in all its departments, we are said to leave them all incomplete, thoroughly mastering none: as the stream of knowledge is diffused, it is maintained that it loses its depth.

In considering this subject, we think it desirable to keep in view the principle, that there are two objects to be pursued in relation to the cultivation of knowledge:—the diffusion, as widely as possible, of the stores of information already amassed; and the acquisition of still further stores, by the diligent working of the veins already opened, and the ardent search after the yet hidden treasures of science. Each of these objects is good and great: the one concerns all men, of whatever station or capacity; for general information is now expected from all: the other more directly interests the few whose talents and leisure seem to point them out for the honored instruments of the advancement of science, though, as will be shown, the many may lend an humble but effectual aid to the great work. Is there then any natural or necessary incompatibility between these two objects?

The diffusion of knowledge requires the popularizing of previously established principles; the exhibiting of information in easy and attractive forms. This process demands a peculiar kind of talent, very distinct from that of the original discoverer of truth; and this popularizing ability the present times have supplied to an unprecedented extent. The great mass of modern literature consists of the exhibition, in a popular form, of previously established facts and principles. The wide diffusion of these stores evidently does not diminish their amount: how does it affect their probable increase? It seems natural to suppose that the wide cultivation of intellectual tastes, and the encouragement of scientific pursuits, will excite in numberless minds those faculties of observation and reflection from which we must look for new discoveries, and the carrying forward of the imperfect theories of former students. Thus the diffusion of knowledge tends to deepen the stream, not to make it shallow.

We would not, however, close our eyes to a danger which besets the uninformed, particularly the young, in the swarms of attractive introductions to literature, science, and art, and the numerous pleasing miscellanies which teem from the press for their particular benefit. From the frequent use of these, the child of quick parts and inquiring disposition very early acquires a store of superficial information which dazzles the ignorant, and by the consequent praises of the injudicious, puffs up the young philosopher with a very unphilosophic conceit. We have frequently been highly amused with children of the present generation whose tongues have been so early accustomed to the hard words of science, that the -ologies, -alogies, and -atics, have been as familiar as the names of their toys or their play-fellows, and who have astonished their grandmothers with expositions of scientific principles, which, in

their generation, were the puzzles of the learned. The little people naturally fancy they have mastered sciences which their elders never thought of acquiring. Never, perhaps, was it easier to find the verification of Young's sarcastic lines—

“When young indeed,
In full content we sometimes nobly rest,
Unanxious for ourselves; and only wish,
As duteous sons, our fathers were more wise.”

In young children, however, we are inclined to look upon this conceit as a very venial fault. It may be regarded as the symptom, though in an unhealthy degree, of a love of distinction, which by judicious treatment may render him who exhibits it useful and eminent in the pursuit of knowledge. Nor is there any fault more easily, more naturally, and necessarily cured by the advance of time. It is engendered in the narrow sphere of early life: as the circle enlarges the young aspirant is brought into contact with others of his own age, his equals or superiors in knowledge, and he is speedily taught his proper standing, and learns to correct his false estimate of his own ability by the less favorable view of his neighbors.

In the case of the uninformed of riper years, the vanity arising from the sudden acquisition of superficial knowledge is perhaps a more serious evil, and far more difficult to counteract. Yet, in persons of all ages, there can be no doubt which character to prefer,—that of the inquirer with his mind awakened to the charms of knowledge, though his attainments be superficial, and his heart elated with vanity—or that of the hopelessly ignorant, walking blindfold through creation, heedless of the wonders by which he is surrounded. If in the attempt to substitute knowledge for ignorance throughout the mass of mankind we encounter such evils, creating here and there faults akin to virtues, this is no solid ground of discouragement, especially when we remember that in their very nature such evils are but temporary. The vanity of the superficially informed man, for instance, arises solely from his comparison of himself with his uninformed neighbors: spread throughout them all the same amount of knowledge, and his elevation ceases. The savage who had picked up a hat on the sea-shore, and was elated by his European dignity above his neighbors, was reduced to the condition of one member of a hatted aristocracy by the arrival of a ship which supplied to a limited extent the demand for the new head-dress. Continue the intercourse, and the hat ceases to be even an aristocratic distinction: all are covered, and none are proud of their covering.

Thus it appears that the evil is but temporary in both cases: the vanity arising from superficial knowledge in the young dies out as they grow older—in the uninformed of riper years, by the advance of their neighbors to their own standing. In the mean time, however, it may not be amiss to suggest one or two considerations which may tend to accelerate the process.

It is the abuse of the amusing and attractive introductions to knowledge, so abundantly supplied in

modern times, which creates the vanity which we lament. They were intended as introductions merely, to excite a curiosity which should seek its gratification in a thorough investigation of the subject thus brought before the reader. It is the use of them by themselves, the resting in the picture-alphabet instead of advancing to the intellectual stores which lie beyond, which forms the superficial character whence vanity springs up as from its native soil.

By the judicious use of these elementary books, the fault may be corrected. We would most earnestly impress on the attention of all readers the necessity of prosecuting further some one branch of knowledge to which they are introduced by their general reading. They will soon discover for what particular branch they are best fitted, by observing which it is that interests them most, and makes the deepest impression on their minds. This then, whatever it may be, let them set up as the main object of their study. This let them follow out in books of a deeper character than those elementary treatises which first discovered to them their leading tastes. Let them not neglect to increase their general knowledge; but let them sedulously cultivate this particular branch. The first and most striking advantage of this course is, that it will be the more likely to lead to eminence in intellectual pursuits. The path to distinction is through the cultivation, in concentrated force, of some single branch of knowledge. But there is a more important advantage of the course we recommend. The thorough investigation of one chosen topic of inquiry is as favorable to humility as the superficial attention to all is to vanity. After long and diligent study, the inquirer begins to feel in some degree master of his subject; yet even here he sees before him in the race others whom his own experience teaches him how highly to respect. His supposed acquaintance with general knowledge suffices, at any rate, to show him how wide is the field of science, of which he has been cultivating but a corner. His general knowledge then unites with his especial scientific attainments to produce humility, that truest ornament and surest accompaniment of real knowledge. Knowledge produces in him its proper moral effects: it makes him not only wiser but better. As an individual, he will continue diligently to follow up the science of which he has acquired a portion: his acquisitions will give him self-respect, yet stimulate his desire for further advance. As a member of society, he will possess the inestimable qualities of a good learner as well as a good teacher: he will be full of information on his favorite subject; yet ever ready in return to learn from others whose particular studies have fitted them likewise to instruct in their own department. The respect which he owes to them will be cheerfully paid, for it rests on the same foundation as that which he claims for himself; and intellectual activity will be gracefully united with mutual good-will.

LIGHTNING.—It has been ascertained by a series of ingenious experiments that the velocity at which lightning, or electric fluid moves, is not less than 200,000 miles in a single second of time.

THE ASTRONOMICAL CLOCK.

THIS wonderful clock has excited considerable interest among the *savans* assembled at Strasburg, and some further descriptions have been published of the extraordinary complication of its performances, and the ingenious means by which they are effected. The following description is from the foreign journals.

This astronomical clock is composed of three parts, respectively dedicated to the measure of time, to the calendar, and to astronomical movements. The first thing to be created was a central moving power, communicating its motion to the whole of the mechanism. The motive, which is itself a very perfect and exact time-piece, indicates on an outer face the hours and subdivisions, as well as the days of the week: it strikes the hours and the quarters, and puts in motion divers allegorical figures. One of the most curious of these is the genius placed on the first balustrade, and who turns, each hour, the sand-glass that he holds in his hand. The cock crows, and a procession of the apostles takes place each day at noon. In the calendar are noted the months, days, and dominical letters, as well as the calendar properly so called, showing all the saints' days in the year.

The plate on which the signs are marked revolves once in 365 days for the common, and 366 for the bissextile year; marking at the same time the irregularity which takes place three consecutive times out of four in the secular years. The moveable feasts, which seem as though they followed no fixed rule, are, nevertheless, obtained here by a mechanism of a marvellous ingenuity, in which all the elements of the ecclesiastical computation—the millesimal, the solar circle, the golden number, the dominical letter, and the epacts—combine and produce, for an unlimited period, the result sought. It is at midnight of the 31st of December that the other moveable feasts and fasts range themselves on the calendar in the order and place of their succession for the whole of the following year. The third division solves the problems of astronomy. It exhibits an orrery, constructed on the Copernican system, which presents the mean revolution of each of the planets visible to the naked eye. The earth, in her movement, carries with her her satellite, the moon, which accomplishes her own revolution in the space of a lunar month. Besides, the different phases of the moon are shown on a separate globe. One sphere represents the apparent movements of the heavens, making its revolution in the course of the sidereal day. It is subjected to that almost imperceptible influence known as the procession of the equinoxes. Separate mechanisms produce the equations of the sun, its anomaly and right ascension. Others, the principal equations of the moon; as its erection, anomaly, variation, annual equation, reduction, and right ascension. Others, again, relate to the equations of the ascending node of the moon. The rising and setting of the sun, its passage to the meridian, its eclipses, and those of the moon, are also represented on the dial.



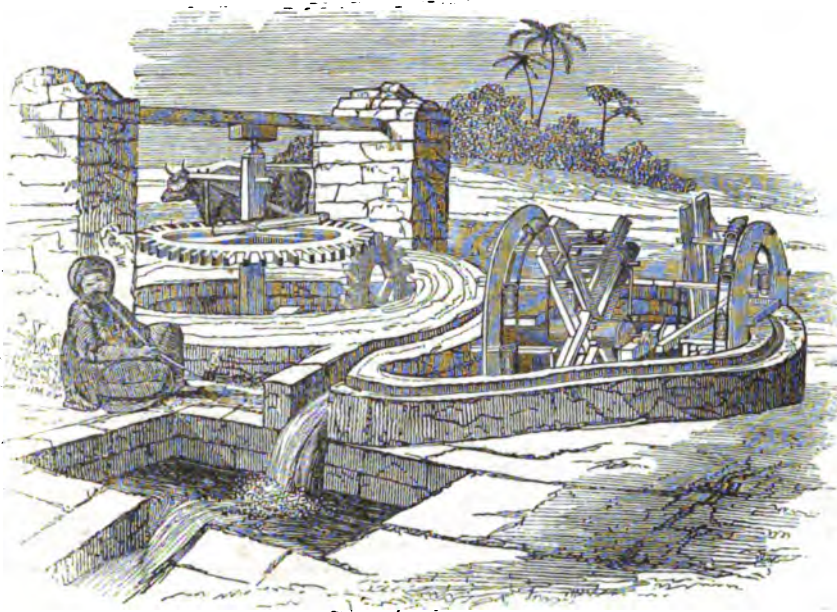
Modern Shadoofs.

IRRIGATION IN THE EAST.

ARTIFICIAL irrigation, as a means of promoting the fertility of the soil, is comparatively but little attended to in our agricultural system. The moistness of the climate, and the frequent showers dropping fatness upon the land, will sufficiently account for this neglect, though it is probable that these natural advantages are not for the future likely to preclude that attention to the subject of artificial irrigation which it deserves. The rich water-meadows on the banks of some of our rivers afford proofs of the utility and profit which result from irrigation, if conducted according to the rules dictated by experience or science. The agriculturist who has paid attention to chemistry and botanical physiology knows that water is the most essential element of vegetation, and that neither the seed can germinate nor the plant receive nourishment without moisture. In warm climates, when the periodical rains occur, even the desert becomes blooming and covered with verdure; but soon after they have ceased, the constant evaporation soon dries up the moisture, and it again assumes its arid and lifeless appearance. The warmer the climate, and the more rapid the evaporation, the more luxuriant is the vegetation, provided there be an abundant supply of water. "It

seems, (says the writer of the article 'Irrigation,' in the 'Penny Cyclopædia,') that where there is great heat in the air, water alone will supply the necessary food for the growth of plants. It is probable that the component parts of the atmosphere are more easily separated, and made to enter into new combinations with those of water, in a high temperature, than in a lower; or that the leaves and green parts of vegetables imbibe water in a state of solution in air, and that in this state it is more easily decomposed. Atmospheric air and water contain all the principal elements of vegetables, namely, oxygen, hydrogen, carbon, and nitrogen: the remainder are either found in the soil or diffused through the water. Manures seem to act principally as stimulants or reagents, and are themselves composed of the same elements." To these principles, therefore, are to be referred the importance of irrigation in all dry and hot countries, where no expense is spared to obtain a supply of water, and ingenuity is taxed to the utmost to distribute it over as large an area as possible, for beyond the limits of irrigation the soil is comparatively unproductive.

Egypt, Syria, and Western Asia, where rain is discontinued throughout the summer, and where, in consequence of that and of the extreme heat, all the



The Sackiyeh, or Persian Wheel.

smaller streams are dried up, will furnish us with the most ancient practices of irrigation, and they are those which still prevail in those countries.

When the water was near at hand, as in a reservoir upon the grounds, the plan was sufficiently simple, and the sculptures of ancient Egypt contain figures of men with a yoke upon their shoulders bearing water-pots. When the river is high, or the banks low, two men are employed to raise the water by their united action, in a single vessel (called *chutweh*). They stand opposite each other on the different banks, and holding a vessel by ropes, they let it descend into the water, and on its being filled raise it to the surface, and pour the contents into a trench, which conducts it to the gardens or other grounds where it is required.

It is, however, in such cases, more usual to raise the bucket by means of the *Shadoof*, which is the most common and simple of the machines used in the East for raising water, whether from rivers or from wells. It is thus described by Mr. Lane:—"It consists of two posts or pillars of wood, or of mud and canes or rushes, about five feet in height, and less than three feet apart, with a horizontal piece extending from top to top, to which is suspended a slender lever, formed of a branch of a tree, having at one end a weight chiefly composed of mud, and at the other, suspended from two long palm-sticks, a vessel in the form of a bowl, made of basket-work, or of a hoop and piece of woollen stuff or leather: with this vessel the water is thrown up to the height of about eight feet, into a trough hollowed out for its reception." This mode of raising water is sculptured on the monuments of ancient Egypt.

When the river is too low, or its banks too high for shadoofs on the same level to raise the water to the

surface of the soil, a series of four or five shadoofs is rendered necessary. The water is then raised from the river by shadoofs, and discharged into a trench, from which it is taken by other shadoofs, and discharged into another trench above, and so on from trench to trench, as represented in the cut, until it is raised to the level of the fields.

Another machine, much used for the same purpose as the shadoof, not only on the banks of the Nile, but on those of the Euphrates, Tigris, and all the principal rivers of Western Asia, is the *Sackiyeh*, and which is usually in all cases called "the Persian Wheel," in which country it is very largely employed for the irrigation of gardens and other cultivated grounds. The example exhibited in the cut is one of the most perfect of the kind, being used for the irrigation of the gardens of one of the old beys, on the banks of the canal by which Cairo is traversed. The following is Mr. Lane's description of this machine:—"The Sackiyeh "mainly consists of a vertical wheel, which raises the water in earthen-pots attached to cords, and forming a continuous series; a second vertical wheel fixed to the same axis with cogs; and a large horizontal cogged wheel, which, being turned by a pair of cows or bullocks, or by a single beast, puts in motion the two former wheels and the pots. The construction of the machine is usually of a very rude kind; and its motion produces a disagreeable croaking noise." The revolution of the wheels takes down the string of buckets on one side, and brings them up full on the other. On reaching the top, they are reverted by the continued action of the wheel, and pour forth their contents into a trough which conducts it to a reservoir, whence it is distributed in rills over the garden. It is by the wheel and string of buckets that water is usually raised from

wells in Syria, although the shadoof is sometimes employed. A contrivance similar to the shadoof is occasionally used for wells in some parts of Great Britain, and may be frequently seen in the north and east of Europe, in the United States, and in Canada.

There is another machine used for the irrigation of lands, when it is only necessary to raise the water a few feet. This is called the *Taboot*, and Mr. Lane describes it as somewhat resembling the sackiyeh, "the chief difference being that, instead of the wheel with pots, it has a large wheel with hollow jaunts, or fellies, in which the water is raised."

Grounds requiring to be artificially watered are divided into small squares by ridges of earth or by furrows; and the water, flowing from the machine or cistern into a narrow gutter, is admitted into one square or furrow after another by the gardener, who is always ready, as occasion requires, to stop and direct the torrent, by turning the earth against it with his foot, and opening at the same time with his mattock a new trench to receive it. This mode of distributing water over a land rarely refreshed with rain is more than once alluded to in the Scriptures; and indeed a distinction is founded upon it between Egypt and the Land of Canaan (*Deut. xi. 10, 11*).

REFLECTIONS ON PUBLIC DIVERSIONS.

THE subject of public diversions has given birth to much sophistical argument, and well-meant declamation.

The man of pleasure, the devotee, the wit, and the philosopher, have respectively viewed and treated the subject according to their own feelings, turn of mind, and knowledge of men and things.

Hence they have alternately vindicated and condemned, either with a partiality dictated by the mere love of amusement, or with the censoriousness of a contracted, gloomy, and cynical mind.

Diversions may be said to be of two kinds, the one tending to vice and folly, the other to health and amusement; the former should be discountenanced, and the latter encouraged.

All ages and nations have had their public amusements. In proportion as the refinements of taste and manners consequent on civilization prevail, public diversions become less savage and barbarous.

The Olympic and other games of Greece, the dreadful combats of wild beasts and gladiators, are now no more.

Bull-baitings and other cruel sports are now detested by all except the lowest of the vulgar; and public diversions are substituted, which, however inimical they may be, in many respects, to propriety and good manners, are far less shocking to humanity.

This, however, does not alter the nature of man; as he is at all times the same; he must be doing something, either of good or evil.

With him every hour has its duties; and that almost universal thirst after diversion and unprofitable amusement generally predominates, which leads on to idleness, luxury, and dissipation.

All those who are immoderately terrible in these pleasures, become gradually enervated and reduced to a state of vassalage and ruin.

When the watchman slumbers on his post, an insidious enemy may easily obtain the honors of conquest. It was in the hour of general festivity, excess, and inebriation, that Babylon gave to Alexander the triumphs of victory.

The Roman empire, great and stable as it was, began to exhibit evident marks of decay, when its senators and rulers exchanged their native simplicity of manners for the pomp of luxurious elegance, the feast, the dance, and the song; and thus set the example of licentiousness before the inferior ranks of the people.

While her Consuls, Tribunes, and Dictators practised temperance, sobriety, and inflexible public virtue, she flourished and gave laws to the world.

True greatness and honor were not then confined to palaces; they shone in the village, the cottage, and the field.

Cincinnatus at the plough was a far more praiseworthy and exalted a character, and example of usefulness and virtue, than Cæsar at the circus, the theatre, or the triumph.

But no sooner had the governors broke through those rules on which the preservation and safety of the empire depended, than the contagion spread with irresistible violence through all the subordinate ranks of the body politic.

The freemen and plebeians soon extended the breach their rulers had made, and followed them in everything conducive to public ruin.

Thus it was with ancient Greece and Rome, once the glory of nations; now, in a great measure, the seats of ignorance, superstition, and slavery; and, as the same causes naturally produce the same effects, there is reason to fear that every great empire will meet with the same results.

Luxury and dissipation is a kind of general disease, and almost epidemical. Few, indeed, there are who have nerve enough to retain their proper senses amidst the general delirium, so as to be perfectly free, that their examples shall shine with distinguished lustre. With what eagerness do the gay and giddy pursue pleasure in all her varying forms!

The opera, theatres, masquerades, balls, races, gambling-houses, &c., principally divide their time and their money, and constitute a perpetual round of unprofitable and often of ruinous folly.

While the great spend their time and fortunes in such a giddy round of expensive amusements, others, excited by the prevalence of their example, will imitate them to their ruin.

By such conduct innumerable evils have been introduced to all ranks, even to the private tradesman. Every class has caught the infection, and no sooner does one rank step out of its proper station, than the next succeeds it, and fills up the chasm.

The number of public places of diversion in and about the metropolis, has been long and justly complained of as a nuisance, as being highly prejudicial to the morals and fortunes of the people.

It is well known that many unguarded and inex-

perienced youth have been excited to commit acts of injustice to supply wants occasioned by the pursuit of expensive diversions ; and proceeded from one degree of guilt to another, until the loss of liberty or life has put a period to their crimes.

Let it be remembered that every species of pleasure, however lawful, under proper restrictions, becomes unlawful and hurtful when immoderately indulged.

There is a fixed point at which we ought to terminate enjoyment, by retreating from the influence of its immediate cause, if we wish to preserve uninjured the faculties or organs through which that enjoyment is communicated.

When extended beyond this point, the perceptive faculties and moral powers become relaxed ; our finest feelings are destroyed ; a kind of listless languor ensues ; and we become unfit for the exertion of that fortitude which is necessary to repel the insidious as well as open attacks of vice.

Thus a constant round of diversions, even admitting them to be innocent, enervates the mind, throws it off its proper guard, and renders it more liable to receive injurious impressions, than while it remains protected by the rules of sober reason and inflexible virtue.

It was probably for this reason that the Lacedæmonians kept so strict a guard over their youth, lest by occasional indulgence the desire after and pursuit of pleasure should become habitual.

They knew the authority of reason over the passions was more easily preserved than regained when lost ; and, therefore, under the government of the wise Lycurgus, almost every species of luxury, intemperance, and vain amusement was prohibited.

It was a maxim among this sagacious people, that frugality and temperance preserved the faculties of the mind free and uninterrupted, and rendered the body most fit for vigorous exertion in a regular course of useful action.

The history of past ages, the natural course of human events, and the testimony of sound reasoning on established principles, all concur to show us the folly of not keeping within the strict rules of propriety in every transaction of our lives, particularly in all public places of diversion, in which there are so many temptations.

Allured by these amusements, many may thence date their first deviations from propriety and from virtue. The love of what is called harmless recreation has drawn them to be spectators of scenes, which they had fondly hoped to retreat from with undiminished innocence.

But many have been led by imperceptible gradations from pleasure to folly, and from folly into crimes which in the hours of sober reflection they would have trembled at the thought of committing.

As vice is the proper object of aversion to every rational being, all the avenues that secretly admit it ought to be guarded with the utmost caution.

And as vice is never so dangerous as when it assumes the mask of harmless pleasure, whatever tends to introduce it under that alluring form, ought to be most studiously avoided.

Depraved as human nature is, men do not suddenly become really wicked. It is by slow gradations that vice, as well as virtue, gains absolute dominion in the mind.

Let us view our public diversions in whatever light we may, they all appear hostile to morality, virtue, interest, and domestic happiness ; it therefore behooves all those who have it in their power, to prevent their influence as much as possible.

It is well to remark that we by no means wish to denounce public diversions, but to point out the improprieties and follies which are committed there ; and of the danger and evils attending them.

THE SUN.

THE Sun is said to present a singular appearance, and to have something the matter with a portion of its disk, over which a smoky vapor seems to hang. It is of little consequence what fancies we adopt respecting this extraordinary phenomenon. It may be that it is the commencement of that disruption in the planetary system which is to blot out the sun's fiery orb, and envelope the world, with all created nature, in one general conflagration. That such a winding up of the material world as is foretold by Holy Writ is probable, and indeed not only probable, but certain, may be inferred from the extraordinary fact that during the last three centuries not less than fifteen hundred stars in different constellations, none of them below the sixth degree of magnitude, have totally perished. Forty have changed their sizes. Several instances are known in which they have unquestionably been consumed by fire. Their first unnatural appearance has been a bright flaming rush-light aspect, so bright as to be visible at noon day to the naked eye, which gradually became paler until an ashy hue marked the spot, and then they have disappeared altogether, and the spaces which they occupied in the heavens have become blanks upon its vast face. One of these burning orbs was sixteen months from the time of its first being discovered on fire until it was blotted out of the constellation.

That which has befallen planets, which may have given light and fructifying seasons, as the sun gives heat and fruitfulness to our earth, will also in time befall our own. The times nor seasons we know not, nor the manner in which that consummation of all things is to be brought about, but nothing we think more certain. Whether, like the Phoenix, this world of ours contains within its bowels the central fires which are one day to break out into a consuming flame, or whether the sun, after having blazed for so many thousand years, shall then light the funeral pile of created matter, on which he is to be also consumed or whether some comet with a blazing train that shall sweep through the immensity of the ethereal space shall do the work and put a period to time, we know not ; but the fact is apparent. It has been foretold by revelation, it is inscribed upon the heavens by the burning of the planets ; we feel it in the earth, in the bursting out of those flames which shake this solid globe from its centre to its circumference.

BLACK-CAP TITMOUSE.
NATURAL HISTORY.



BLACK-CAP TITMOUSE,

BY J. J. AUDUBON.

THE opinion generally entertained respecting the extensive dispersion of the Black-cap Titmouse, has in all probability originated from the great resemblance which it bears to the Carolina Titmouse, *Parus Caroliniensis*, that species being now known to extend its spring and summer migrations as far eastward as the State of New Jersey, where it has been found breeding by my friend Edward Harris, Esq., of Moorestown. The Black-cap, on the other hand, is rarely observed farther south, and then only in winter, when it proceeds as far as beyond the middle portions of Maryland, from whence I have at that season received specimens in spirits, collected by my friend Colonel Theodore Anderson, of Baltimore. Westward of the Alleghanies it extends as far as Kentucky in winter, but at the approach of spring returns northward. In Pennsylvania and New Jersey some are known to breed; but as the Carolina Titmouse breeds there also, it is difficult to say which of them is the most numerous, they being so like each other that one is apt to confound them. In the State of New York it is abundant, and often rears two broods in the season; as you proceed eastward you may observe it in all places favorable to its habits; and, according to Dr. Richardson, it is found as far north as lat. sixty-five deg., it being in the Fur Countries the most common bird, "a small family inhabiting almost every thicket." None were seen by Mr. Townsend, either on the Rocky Mountains or about the Columbia river, where, on the contrary, *Parus Caroliniensis* is abundant, as it is also in

the Texas, where I found it breeding in the spring of 1837. It differs from the Marsh Titmouse of Europe, *P. palustris*, not only in color, but more especially in its habits and notes.

Hardy, smart, restless, industrious, and frugal, the Black-cap Titmouse ranges through the forest during the summer, and retiring to its more secluded parts, as if to ensure a greater degree of quiet, it usually breeds there. Numerous eggs produce a numerous progeny, and as soon as the first brood has been reared, the young range hither and thither in a body, searching for food, while their parents, intent on forming another family, remain concealed and almost silent, laying their eggs in the hole deserted by some small woodpecker, or forming one for themselves. As it has been my fortune to witness a pair at this work, I will here state what occurred, notwithstanding the opinion of those who inform us that the bill of a Titmouse is "not shaped for digging." While seated one morning under a crab-apple tree (very hard wood, reader,) I saw two Black-cap Titmice fluttering about in great concern, as if anxious to see me depart. By their manners, indeed, I was induced to believe that their nest was near, and, anxious to observe their proceeding, I removed to the distance of about twenty paces. The birds now became silent, alighted on the apple-tree, gradually moved towards the base of one of its large branches, and one of them disappeared in what I then supposed to be the hole of some small woodpecker; but I saw it presently on the edge, with a small chip in its bill, and again cautiously approached the tree. When three or four yards off I distinctly heard the peckings or taps of the industrious worker within, and saw it come to the

mouth of the hole and return many times in succession in the course of half an hour, after which I got up and examined the mansion. The hole was about three inches deep, and dug obliquely downward from the aperture, which was just large enough to admit the bird. I had observed both sexes at this labor, and left the spot perfectly satisfied as to their power of boring a nest for themselves.

The Black-cap Titmouse, or Chickadee, as it is generally named in our Eastern States, though exceedingly shy in summer or during the breeding season, becomes quite familiar in winter, although it never ventures to enter the habitations of man; but in the most boisterous weather, requiring neither food nor shelter there, it may be seen amidst the snow in the rugged paths of the cheerless woods, where it welcomes the traveller or the wood-cutter with a confidence and cheerfulness far surpassing the well-known familiarity of the Robin Red-breast of Europe. Often, on such occasions, should you offer it no matter how small a portion of your fare, it alights without hesitation, and devours it without manifesting any apprehension. The sound of an axe in the woods is sufficient to bring forth several of these busy creatures, and having discovered the woodman, they seem to find pleasure in his company. If, as is usually the case, he is provided with a dinner, the Chickadee at once evinces its anxiety to partake of it, and loses no opportunity of accomplishing its object, although it sets about it with much circumspection, as if it were afraid of being detected, and brought to punishment. A woodcutter in Maine assured me, that one day he happened to be at work, and had scarcely hung up his basket of provisions, when it was observed by a flock of these birds, which, having gathered into it at once, attacked a piece of cold beef; but after each peck, he saw their heads raised above the edge, as if to guard against the least appearance of danger. After picking until they were tired or satisfied, they left the basket and perched directly over his fire, but out of the direction of the smoke. There they sat enjoying themselves and ruffling their feathers to allow the warmth more easy access to their skin, until he began his dinner, when they immediately alighted near him, and in the most plaintive tones seemed to solicit a portion.

Wilson and others have spoken of this species as being addicted to moving in the company of our smaller Woodpeckers and Brown Creepers, and this in such a way as to induce most readers to believe the act to be customary; but I have often found groups of them, at times composed of more than a dozen, without any such companions, and I should be more inclined to think that the Downy Woodpecker, and the Brown Creeper, seek the company of the Titmice, rather than that the latter associate with them. Often, indeed, have I watched the busy Chickadees, as they proceeded from tree to tree, and from branch to branch, whether by the road-side or in the interior of the forest, when no other birds were with them. The light rustling sound of their concave wings would intimate their approach as well as their retreat, as gayly one after another they passed onwards from one spot to another, chattering,

peeping everywhere, and determined, as it were, not to suffer a chink to pass without inspection. Now hanging, back downward, at the extremity of a twig, its feet almost up to its bill, it would peck at a berry or a seed until it had devoured it, or it had fallen to the ground: should the latter be the case, the busy bird would at once fly down, and hammer at the fruit. To the Black-cap Titmouse the breaking of a hazel-nut is quite a pleasure, and I have repeatedly seen the feat accomplished not only by a bird in its natural state, but by one kept in confinement. Courageous, and at times exceedingly tyrannical, it will attack young birds, break their skulls, and feed upon their flesh, as I have more than once witnessed. In this habit they resemble the Jays, but in every other they differ entirely from those birds, although the Prince of Musignano has thought fit to assimilate the two groups. The Chickadee feeds on insects, their larvæ, and eggs, as well as on every sort of small fruit, or berries, including grapes, acorns, and the seeds of various pines. I have seen them eat the seeds of the sunflower, the pokeberry, and pears, as well as flesh of all kinds. Indeed it may be truly called omnivorous. Often, like Jays, you may see them perched as it were upon their food, and holding it beneath their feet while pecking at it; but no Jays are seen to hang head downwards at the end of a branch.

The nest of this species, whether it be placed in the hole of a Woodpecker or squirrel, or in a place dug by itself, is seldom found at a height exceeding ten feet. Most of those which I have seen were in low broken or hollowed stumps only a few feet high. The materials of which it is composed vary in different districts, but are generally the hair of quadrupeds, in a considerable quantity, and disposed in the shape of a loose bag or purse, as in most other species which do not hang their nests outside. Some persons have said that they lay their eggs on the bare wood, or on the chips left by Woodpeckers; but this is not the case, in so far as I have examined them; and in this my observations are confirmed by those of Dr. Brewer, of Boston, and Mr. McCulloch, of Halifax, who also have inspected nests of this species. The eggs rarely exceed eight in number; they measure five-eighths of an inch in length, by three-eighths and three-quarters, are rather pointed at the smaller end, white, slightly sprinkled with minute dots and markings of light reddish. Those of the first brood are deposited from the middle of April to that of May; for the second about two months later. The parents I have thought generally move along with the young of the second brood.

The flight of this species, like that of all our American Titmice, is short, fluttering, generally only from tree to tree, and is accompanied with a murmuring sound produced by the concavity of the wings. It is seldom seen on the ground, unless when it has followed a fruit that has fallen, or when searching for materials for its nest. It usually roosts in its nest during winter, and in summer amid the close foliage of firs or evergreens. In winter, indeed, as well as often in autumn, it is seen near the farm houses, and even in villages and towns, busily seeking for food among the trees.

LIME IN AGRICULTURE.

Of the mineral substances that have been employed to improve the soil, lime is the most important. All our lands seem to be susceptible of great benefit from it; and in many parts it can be obtained on such terms as to create a probability that it may be profitably applied. The theory of its modes of action involves chemical principles which it would be beyond our limits to attempt to explain here; the following are, however, the facts connected with its various effects.

It renders stiff and tenacious soils more friable—and light and sandy soils more retentive of moisture. It disposes all vegetable matter in the soil to decompose, so as to supply the nourishment of living plants, and it makes the nutritive matter itself more salubrious. These last effects may be seen in familiar instances. If a little quick lime be added to a heap of leaves, or rotten wood, it is soon reduced to black mould; and if a little be sprinkled on the rank spots which get up in pasture fields, and are rejected by cattle, they will shortly be eaten down. It is not more active in rendering the vegetable matter of the soil available, than it is in giving vigor to the plants, and goodness of quality to the grain; and on no grain are its effects so remarkable as on wheat. We knew a gentleman who, from having a great command of manure, thought he might dispense with lime. He raised by measure as many bushels of wheat on the acre as his neighbors; but it was coarser in quality, and therefore lighter, and in the British markets great discrimination of price is made on account of quality; so that he lost in two ways. He had at last recourse to lime, and with complete success.

In cold and humid climates, it is not considered that old turfy lands can be profitably broken up without lime; the straw will be abundant, but the grain light and unmaturing—treated with lime, these lands are the most productive. In our climate, the vegetable matter has not such a tendency to become peaty and inert, and lime may not, to such a degree, be necessary for the purpose of promoting decomposition; but it would in every case make our wheat of better quality. In our best lands, it would give health and vigor to the straw; and render it less obnoxious to the diseases to which luxuriance is exposed, and it would make lands, at present too rich for bearing grain, capable of producing healthy and productive crops. From what has been said, it will follow, that it would be improper to apply lime to impoverished land, unless at the same time accompanied with manure, without which it would aid in the robbery of the soil. For other reasons, it should not be applied to wet land.

In calculating the expense of liming, the permanency of its effects should be taken into account. If a proper dose be administered, there will be no need of a repetition of it for 15 or 20 years. What the dose should be, must depend on the quality of the land; but, generally speaking, it should be increased as the land is more adhesive, or as it is more filled with vegetable matter. There are no soils, probably, that would be benefited by less than 100

bushels to the acre, or which would require more than 300 to produce the maximum effect. As, in proportion to the mass of the soil, the quantity of lime used is small, the two should be mixed together as equally and intimately as possible. The lime may be allowed to lie till it falls down into a state of flour, and then be spread out, when the soil has been previously well pulverized.

THE ATMOSPHERE.

This is described as a thin, invisible, elastic fluid, surrounding the earth, and extending to the height of fifty miles from its surface; it is the medium or element in which we live and breathe, and consequently contains the principles of life, and constitutes the power of vegetation. The specific gravity of air is about 850 times less than that of water, so that one gallon of air will weigh a little less than one-seventh of an ounce. This air we are constantly inhaling by the action of the lungs, which air, expanding by the vital heat, is expelled, and the vacuum supplied by a fresh inhalation. It is, therefore, evident that air too much rarefied is not proper to sustain animal existence, and that air too much condensed is alike unsuited for that purpose; therefore any effluvium raised or imbibed that tends to impregnate the air with vapors, or atoms of a strange or unusual kind, even though odoriferous and agreeable to the scent, is unwholesome; plants as well as animals will decline under the influence of vitiated air. The whole expanse filled with the fluid called air, or what we denominate the atmosphere, is the region or reservoir of the winds, those winds being the floating streams that run in currents from the surcharged towards the exhausted parts of the spacious void. Wherever the air becomes rarefied, or the moisture of its composition diminished, to that part will it rush, with a force equal to the weight by which it is impelled; and that weight will be in exact proportion to the preponderancy of the circumambient element over the specific gravity of the space rarefied. Heat, as has just been observed, is the cause of this phenomenon, for, in fact, heat engenders motion, and motion excites heat, so that there is a reciprocity of influence, of which we shall treat in a subsequent part of these observations.

The component parts of air, or the atmosphere, cannot be positively defined, because we cannot describe that which is invisible; we discover fire and water as the chief ingredients, but what other elements of nature more subtle than fire may exist, we do not know; the electric fluid, though acting on combustible bodies, is perhaps only the agent that provokes the flame, and carries with it or collects the fire that invests the surrounding space; but there is a magnetic quality in the electric fluid, that indicates something of a nature yet undiscovered; there may be a distinct element in this irresistible force of motion. Fire will not naturally adhere to indurated bodies; it requires violent and continued motion to

infuse its particles, and to make it separate the atoms of iron; but lightning instantly decomposes that substance, and reduces it to a state of *fusion*. It seems likely from this experimental process, that an element more penetrating and keener than fire pervades the universe, and another still on *ad infinitum*.

Air is indestructible; that is, you cannot change its nature; it will still be air under whatever process you may place it; you cannot make it anything else; but its quality may alter, and is subject to perpetual changes, such as *hot, cold, moist, and dry*; these are variations, but only in the effect that it produces, according to circumstances, for it loses nothing of its substance, nor transforms into any other element. This peculiarity also excludes the possibility of analysis, or division of its parts.

The elasticity of the air, which gives it transparency, is that quality which enables us to see objects distinctly; the light passes through it to the organs of sight, and penetrating to the optic nerve, pictures the form of substances by reflection upon the visual tablet. Again, the atmosphere is most admirably adapted to sustain our existence by the power it possesses of purification, and the exact adaptation of its substance for animal respiration; were it more dense than it is, we should be in continual darkness; were it more thin and rarefied, we could not breathe in it, but must soon expire.

Our atmosphere is the medium through which LIGHT is communicated to us, and had we no atmosphere, we should be unable to distinguish one object from another; for a flood of light would inevitably destroy the sight and deprive us of vision, just as by fixing our eyes on a full-shining sun, we shall for a moment after be unable to see anything distinctly. LIGHT is transmitted through the atmosphere in a broken or undulating course; it enters the surrounding medium through which we view it in a direct course, but becomes bent in the descent, by which a luminous body will appear higher than it really is above the horizon: this peculiarity may be exemplified by putting a straight stick into water in a slanting direction; the end that is immersed will seem crooked, and appear higher than it actually is, because the rays of light are conveyed into the water in the same refrangible manner as they pass through the atmosphere. Planets and comets are luminous through the atmospheres that surround them, whether the light they emit be primary or reflected. LIGHT is not a substance, but an effect of some influence that operates on the elastic element called ether, and can neither be produced nor reflected without the medium on which it has to act; neither is SOUND a substance, but the effect of a concussion on the ATMOSPHERE; for the blow of a hammer in an exhausted receiver will make no sound, nor could either light or sound find a conductor to the eye or ear without an atmosphere; yet, the atmosphere is not light nor sound, but it is the medium of both; that is, the element by which we are made sensible of both, and through which we realize their benefits.

THERE are no solid rocks in the arctic region, owing to the severe frosts.

ANIMAL MOTION.

ANIMAL motion is wonderful, though from its perpetually meeting the eye, we take little account of it. The Pholas (a shell-fish) has the power of perforating the hardest marble by means of a fleshy substance, apparently no way suited to so laborious an employment. It increases its cell as it increases its size: and constitutes a perfect example of the first rudiments of animal motion. The only impulse an oyster possesses arises out of its power of opening and shutting its shell. The muscle moves by means of a muscular substance resembling a tongue. The crab moves sideways, and the water fly swims upon its back. The serpent undulates, and the lion-ant moves backwards; it has no power to make the smallest inclination forward. Marine birds can walk, run, fly, and swim. Some animals can only walk, others only run, and others only gallop; the horse performs all these motions. The tiger and the crocodile dart; the reindeer runs but never gallops; the armadillo walks swiftly, but can neither run nor leap; while the great ant-eater climbs much better than it can walk. The sloth is a large animal, and yet cannot travel fifty paces in a day; an elk will run a mile and a half in seven minutes; an antelope a mile in a minute; the wild mule of Tartary has a speed even greater than that. An eagle can fly 10 leagues in an hour, and a canary falcon can even reach 253 leagues in the short space of 16 hours. Man has the power of imitating almost all motions but that of flight. To effect these, he has in maturity and health 90 bones in his legs and thighs, 62 in his arms and hands, 60 in his head, and 67 in his trunk. He has also 434 muscles in the structure of his body, and his heart has 3,840 pulsations in an hour.

EXTREME cold produces the same perception on the skin as great heat. When the mercury is frozen at forty degrees below zero, the sensation of the skin is the same as that of touching red-hot iron.

DEATH'S CONQUEST.—By SHIRLEY.

The glories of our birth and state
Are shadows, not substantial things:
There is no armor against fate;
Death lays his icy hands on kings,
Sceptre and crown
Must tumble down,
And in the dust be equal made
With the poor crooked scythe and spade.

Some men with swords may reap the field,
And plant fresh laurels where they kill;
But their strong nerves at last must yield,
They tame but one another still:
Early or late
They stoop to fate,
And must give up their murmuring breath,
When they, pale captives, creep to death.

The garlands wither on your brow:
Then boast no more your mighty deeds;
Upon death's purple altar now
See where the victor-victim bleeds;
All heads must come
To the cold tomb;
Only the actions of the just
Smell sweet and blossom in the dust.



Hall of Abencerrages.

THE ALHAMBRA.

DARK frown thy hills, thou land of beauty and romance, and deep thy rivers flow through valleys rich with the foliage of a thousand years! Thine are the storied walls, and the castled heights, whose jutting peaks are gilded with the stream of recollections, deep and lasting as the world, of marvel, of prowess, and of love! Each lengthening glade, each forest dell, each barren mount, and each fenced town, is chronicled with love of wondrous interest! But the day of thy glory has departed! The Moor, with all his gallant chivalry—the Arab brave, whose spirit enned by magical illusion the checkered lines of varied fate within the mystic future sealed—and all

the bright array of mind that shed its halo of departing greatness, is vanished! Superstition hath laid her chilling grasp on all thy beauty, and now sits brooding on thy power and thy might—clad in a gauze-like mantle of light and truth that scarcely hides her horrible deformity from even the blindest of thy sons—only rendering her more odious to those who apprehend her malignant guile. But her iron chain is around and upon thee. Thou mayest writhe in thy misery, but the darkness of thy doom—the blackness of spiritual death, shall bend thee to the earth, till the force of some spirit, yet to come, shall burst the bonds she has imposed, and the whole machinery of fraud shall crumble to the dust.

Truly indeed does Spain exhibit the miserable

results of a mind enslaved. All who are acquainted with the riches of her landscape beauties—who know how prodigally nature has strewn her gifts—and where art has brought all the appliances of architectural decoration in a style peculiarly appropriate to the scenes in which her edifices are reared, to add a melancholy grandeur to the moral desolation by which the villages and towns are debased, as if to make the picture of national degradation more complete.

It would seem as if there were inherent weakness in the character of the natives of Spain, calculated both to stay their own progress and to give a lesson to the rest of mankind. The richness of vegetation, which the soil spontaneously produces, and the little food which the inhabitants of that climate find necessary to support animal life, have probably induced, and doubtless increased, that sombre impression of self-importance by which the Spaniards are distinguished, and which, leading them to rest in the supposed possession of consequence already attained, has militated so much against every thing like exertion. Theirs has ever been the theory of greatness, and it appears that the national character has always required an infusion from some other source to render it practical.

Most of the monuments by which the country is embellished, certainly those which are most striking, were erected during the existence of the Moorish dynasties in Spain,—a dynasty which required little more than seven months to establish, but above seven centuries to destroy. Among these monuments the most prominent is the ALHAMBRA, or Palace of the Moorish kings at Granada. The whole of that portion of the peninsula is particularly rich in picturesque beauty: rocky defiles, bold cliffs, mountain and hill are met with in confused but most striking variety, while everywhere the most luxuriant foliage covers the earth, and streams of sparkling brilliancy fret among the rocks; but its chief characteristic is abrupt heights clothed with verdure. On the summit of one of these, covering an immense space, and with its fortifications following the sinuosities of the rock, stands the palace of the ALHAMBRA, called more properly *Medinet Alhambra*, or the Red City, from the substance of which its materials are composed. It is difficult of access. Through a wilderness of gardens, and groves of olives, the road winds around until it reaches the gates of Granada. This Spanish-Moresco town, full of all that can remind us of the wild and wonderful, is seated at the foot of a lofty and rugged height that forms the spur of a promontory of the range of the *Sierra Nevada* or *Snowy Mountain*, and overlooks the ancient capital of the kings of Granada. Upon the crest of this hill the fortress of the Alhambra is situated, comprehending within its space nearly the whole of the summit. Of this, however, the palace comprises only a small part; but yet sufficient to form a royal residence of the most magnificent order, and around it the walls of the fortress at intervals project in a bold and impressive manner on the beetling crags of the precipice.

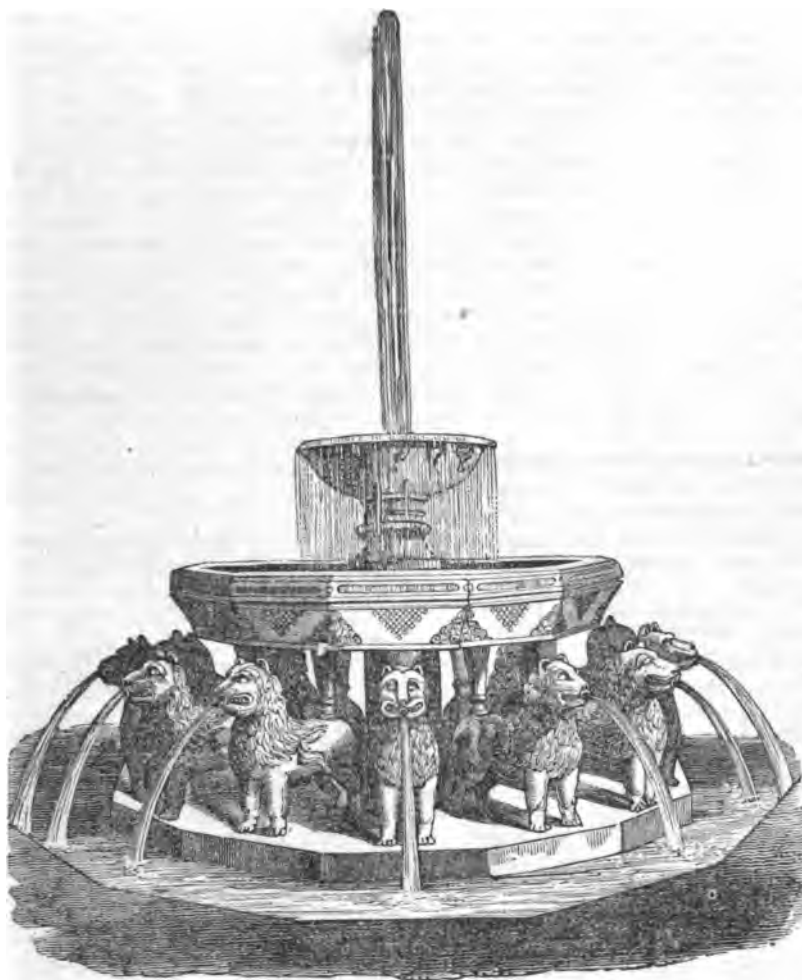
Shortly after leaving the immediate suburbs of the town, a road, or rather, we should say, a broad and

zigzag track, diverges into three roads, the centre of which is devoted to carriages and horses, and takes a much more circuitous path than the other two. The outer paths are much more steep and direct in reaching the top of the elevation, and intended solely for foot travellers. The centre road ascends between the hills of the Alhambra and of *Torres Barmejás*, and is beautifully overarched by the interlacing branches of ancient elms, between which the sun's rays seldom penetrate to dispel the gloom of their shading foliage, or to dissipate the refreshing coolness which is thus occasioned. Innumerable rills dash from peak to peak; and far below, at the very bottom of the ravine, the hurried and turbid stream of the river Darro hastens along its course. Near the summit of the hill we come to the fountain of Charles V.; a pure spring, over which a sort of archway has been erected, something in keeping with the fortress above. Shortly after passing this, the chief entrance to the castle is reached; it is called *Judiciaria*, or Judgment,



Gate of Judgment.

because here, according to the customs of their native East, the Moorish kings sat to give audience to their subjects, and to administer justice. An archway rises within a massive tower, lofty enough to reach to half the height, or more than half the height, of the erection of which it forms a part. It is of the true horse-shoe shape, so characteristic of arabesque architecture, and conducts to the Rubicon, along which the way winds till it leads to an open space called *Plaza de los Aljibes*, or Square of the Cisterns. Here are the two great reservoirs in which the water was retained for the use of the garrison and the other inhabitants of the place. For this there appears a sufficient provision, for one is not less than 102 feet long and 56 feet wide; it is arched over and enclosed by a wall six feet thick, the principal arch being 47 feet wide and 17 feet below the ground. Here also is a well of immense depth, of the purest and coldest water, wrought by the Moors in their endeavors to



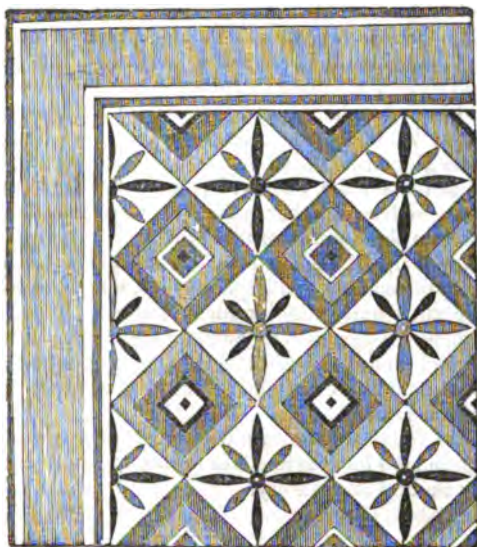
Fountain of Lions.

obtain that necessary of existence in its most crystal state, which, among them, was always considered an indispensable requisite. To the left of this esplanade starts the pile commenced by Charles V., and intended for a palace that should eclipse the erections of the Moslem kings. This is an erection which, in any other place, would have been considered magnificent, but here it is so surpassed by the buildings around, that it serves but as a foil to the costly and elegant lightness of the Arab tracery, and the gracefulness of the older columns. Beyond it is a small and unostentatious portal, which conducts into the palace of the Moors. It opens into a large court called the *Alberca*, paved with white marble, and decorated at each end with light peristyles. In the centre is a fish-pond of 100 feet in length and 30 in breadth, formerly filled with gold and silver fish, and bordered by roses and other fragrant flowers. During the period when the palace was regularly inhabited, however, this was the common bathing court for the servants and other subordinates of the establishment, and was called the *Mesnar*. The walls are covered with beautiful arabesques; and with the devotion

which especially distinguished the followers of Mohammed (who—how different from those better informed as to the way of truth, never exhibited the paltry cowardice of being ashamed of the faith they professed!)—they have added the frequent inscription of *Wa la galib illa-lla*, "God is conqueror." This also is traced on the peristyles at each end.

At what may be termed the internal end of the *Mesnar*, an archway leads to the *Palio de los Leones*, or Hall of Lions, one of the most perfect specimens of Saracenic architecture in existence, and as beautiful as it is perfect. All the array of gorgeous splendor, in the conception of which the imagination loves to revel when thinking of eastern grandeur, is comprised within its precincts. One feels to tread on magic ground; and airy shapes instinct with life and covered with beauty flit before the sight, filling the place afresh with the scenes of days gone by. The mental deception is the more complete, in that the finger of time has left few traces of decay, and the splendor of its original appearance is realized almost without an effort. The court is paved with white marble. In the centre stands the celebrated Fountain of the

Lions. This is a large basin of alabaster, supported by twelve lions, sculptured, it should be observed, in but indifferent taste. Over this basin there is another, but smaller, from which a considerable quantity of water spouts into the open air, and falling from one basin into another, is given out of the mouths of the figures which support the vase. Each of these basins is composed of alabaster, and the whole, seen in the softened tone of moonlight, with the jet throwing its thin stream of crystal dress, which looks like molten silver, while the pouring water gives a liveliness to the beauty, constitutes an object almost more than the imagination can conceive. Around the court runs a gallery, supported by an arcade of beautiful pillars of white marble, which are, however, irregularly placed. The walls, as high as fifteen feet from the ground, are covered with blue and yellow mosaic



Mosaic.

tilings, and the peristyles and fretwork are embellished with arabesque ornaments in the most correct taste. At each end of the court is a portico, supported by marble pillars, uniting into an arcade of the same order as those which sustained the gallery at the sides, and surmounted by a dome enriched with representations of stars of different magnitudes. The whole is colored in gold, carmine, or blue, the effect of which is heightened by the apparent freshness which rests upon it, the whole looking as if it had only lately been completed by the Moslem artist. This appears to have been the portion of all this splendid palace the most dear to the Moorish people who formerly possessed it, and whose descendants even still linger in thought over it with the most exquisite regret. On the gateway of justice, at the entrance, a gigantic hand is sculptured, and within it an immense key, executed by direction of its great founder, indicative, doubtless, of the power of the sultan to open the secrets of the Koran, but considered by the ignorant dwellers around the place as emblematic of the magical arts of the builder of the palace; for to magic alone do they ascribe the present perfect state of the Alhambra.

15

At its foundation, it is said, he laid the palace under a spell, which has thus preserved it, whilst almost every other building of the Moors has fallen to decay and disappeared. Tradition went on to say that this spell would last until the hand on the outer arch should reach down and grasp the key, when the whole pile would fall together, and all the treasures buried beneath it by the Moors would be revealed. With this impression it is not surprising that the people around think of the place with considerable awe. One of those persons who was employed to keep the palace, returning to the Court of Lions in the evening for something which he had forgotten, when daylight was almost gone, saw, to his exceeding surprise, four Moors, turbaned and richly appalled, promenading this court; he stood at first stupified with terror, and then fled in the utmost consternation. They seemed to him as if they were supernatural visitants, come once more either to look upon the scene of their past delight, or to tell where all their treasure was concealed. How they gained access, or how they departed, was a mystery never unravelled. Another attendant, however, who came there shortly after this circumstance, was either less superstitious or more intrepid and acute; for he came with every badge of poverty, but soon retired, bought a handsome house, set up his carriage, and lived with much splendor till the day of his death.

On the left of the Court of Lions is the *Sala des Abencerrages*, in which thirty-six of those brave men, members of a family who evinced a noble devotion to the reigning monarch, were massacred in their endeavor to defend him. Red spots on the pavement, which are in all probability the deposite of water impregnated with iron, are still shown by the cicerone as the stain of their blood.

On the other side of the court is the *Hall of the Two Sisters*, so called from two huge flags of white marble in the pavement, which have neither stain nor blemish in them. A cupola emits a tempered light from above, and ventilates the place. Around on the lower parts of the walls are sculptured the escutcheons of the Moorish kings, on tiles of beautiful workmanship. Above, the walls are faced with stucco-work, invented at Damascus, cast in large moulds, and so joined as to have the appearance of being laboriously worked with the hand into light reliefs and fanciful arabesques, intermixed with the texts of the Koran and poetical inscriptions. These decorations are richly gilt and colored. On each side of the hall are recesses for ottomans and couches. Above, within an inner porch, is the communication with the women's apartments; and the latticed "jalousies" still remain, through which those witching tenants of the harem could look on the scene below.

At the upper end of the Mesnar stands the *Tower of Comares*, so called from a delicate work called *Comaragia*. Even the foundations of this massive tower are laid above the very tops of the pine groves which clothe the side of the precipice on which it stands, and its summit rises high into the air, commanding a view over that wild and impressive country of almost unrivalled grandeur. Beneath it—far, far beneath it—rolls the troubled and hasty stream of the Darro. Within the tower is the Hall of the

Ambassadors, within which was confined the gentle, yet intrepid and constant sultana, Aïsha la Horra, who, having seen herself deserted for the arms of a favorite and too fascinating slave, and all her children butchered, summoned around her her maidens and dependants, and joining their scarfs, let her last and only son down through the window. When their scarfs and veils could reach no further, he clambered by twig and bough until he set his foot on the firm earth below. High above his head the anxious parent watched the snowy crest of a knight, who paced a steed impatient for his rider, and whose snowy crest gleamed fitfully in the moonlight. Fear, hatred, and ambition winged the footsteps of the young Abdallah. A moment's stop, the word exchanged, the youthful hero vaulted on his steed—the son of the sultana felt himself a king! Another moon saw that youth, the chief of a glorious band, return before those castled heights, and, ere another horn was filled, they hurled the tyrant from his throne.

The walls are richly stuccoed and ornamented with arabesques of exquisite workmanship. The ceiling is of cedar wood, inlaid with silver, ivory, and mother-of-pearl. The three sides of the hall are full of windows, made in the immense thickness of the walls, which admit a free current of air, and thus both light and ventilate this beautiful apartment, producing at the same time a surprising effect; and in this manner all the halls of the Alhambra are lighted.

On the east side of this hall is the *Tocador de la Reina*, or Queen's Toilet, in the corner of which is a stone drilled full of holes, for the admission of perfumes, which were burnt below, and by means of these apertures ascended into the royal apartment.

Beside this is the little garden of *Lindaraja*, having an alabaster fountain, and filled with groves of roses, myrtles, and orange-trees.

Divided from the palace of the Alhambra by a ravine, stands the *Cerro del Sol*, or Mountain of the Sun, on which the Palace of the Generaliffe, the summer residence of the kings of Granada, is situated. It is built in the same style as the Alhambra, and is almost equally beautiful in its architecture, and picturesque in its position. Before it lies the plain on which the brave and high-minded Isabella, the queen of the crafty Ferdinand, stood to view the palace of the Moorish king, with but a bare retinue of knights around her. Supposing the party to be reconnoitring with a hostile intention, the Moslem monarch swept from his height, and dared his imagined opponents to the attack. For a time the bands remained opposed in silence to each other, till a knight of immense muscular power and height rode from before the host, dragging at his horse's tail the badge of the Count d'Aguilar, the late renowned and beloved commander of the Castilian army, challenging the bravest of the knights to mortal combat. The queen had ordered that none should move from his place; but the heir of the house of Lara, burning to avenge the loss of his friend, and redeem his country's honor, entreated and obtained permission to meet the infidel who thus kept at bay the Christian chivalry. His horse was light, and, compared to the colossal bulk of his opponent, his person small. They met in mid career,

and the spear of each was shattered to their very hands. Though much shaken, the young Lara kept his seat. Again they met, and beautifully he parried, and with vigor returned the shower of blows which the huge Tarfe aimed at his life; but the spirits of his friends sank, as after a long contest the Christian was evidently yielding ground, and though blood flowed freely from both, yet it was clear that the Count was the weaker of the two. At last he received a blow upon the casque, which stunned him, and the Moor, wheeling his horse in career, caught him by the leg, and dashed him to the earth. In a moment he was on the ground, and prepared to finish his work; but the spirit of Lara was not thus to be subdued. The last and fiercest struggle of all ensued, and the Christian sank beneath his antagonist. The Moor rose in fury—set his foot upon his breast—he flourished high his sword around his head; but just as he was about striking the fatal blow, his arm lost its force, his head sank upon his breast, and he fell prostrate on the earth, with his limbs collapsed in death. The short bright dagger attached to the wrist of the Count was found buried in his heart. The victor lived to enjoy the guerdon of his sovereign's love.

The Moors, dispirited by the loss of their champion, yet dashed on the enemy, but were beaten to their retreat, and so another year the Castilian banner floated on the heights of the Alhambra.

The walls of the fortress are built of a kind of cement of red clay and large pebbles, which, exposed to the air, acquires the hardness of stone. They are sufficiently extensive to contain a garrison of forty thousand men, and within their range was to be found all that could give delight or afford security to their royal possessors.

This immense fortress was built about the year 1273, and fell into the hands of the sovereign of Castile early in the 16th century.

COMICALITIES OF NATURE.

THERE are some objects in animated creation which irresistibly provoke a smile. It is different with inanimate nature, which is variously beautiful, sublime, tame, desolate, wild, or whatever else, but always respectable. There is nothing frisky in the characters of mountains or precipices, plains, lakes, rivers, or seas—unless, indeed, we are to make an exception for some little *burns* in the land of Burns, which the imagination may very readily suppose to be of a tricksey, gambolsome humor, seeing with what deft antics they tumble and trip along their pebbly way, as if to amuse the gowans that ogle them as they pass, from the fairy-befooted sward. But, upon the whole, inorganic creation is not at all funny. Animated nature, on the contrary, presents to us an immense deal that we cannot help feeling to be so.

To begin with the next creatures below ourselves—there are the monkeys, whose whole appearance and movements are grotesque. Who could ever look in the face of one of these animals without that same stirring of the risible faculties which we experience

in perusing a caricature or parody, or witnessing a pantomime? The wretch never laughs itself, but its every gesture is provocative of mirth in us. See it taking care of one of its young, or allaying some temporary irritability in one of its sides, or inspecting any suspicious-looking morsel which may have been given to it, and the perfect whimsicality of the creature must be acknowledged. So thoroughly is this the case, that no one could ever speak of a monkey gravely: the name is never mentioned without a smile or a laugh. The appearance of the sloth is ludicrous, but in a different way. "There," remarks Cuvier, "nature seems to have amused herself with producing something imperfect and grotesque." The mirth excited by this animal is of the derisive kind. We smile to see a miserable-looking creature crawling so abjectly, unable to use its fore-legs for support, and only able to move when it can get something to lay hold of, whereby to pull itself along. The sloth may be, as later naturalists allege, fully accomplished for all the ends of its being; yet it is not less true that, constituted as we are, we cannot help smiling at an object which strikes our minds as so uncouth.

So, also, the peculiar feature of the marsupial tribes is no doubt appropriate to the circumstances in which they live. Yet is it in the power of any human being to think of that feature with the same feelings as those with which, for instance, he would regard the gracile limb of the antelope, or the shaggy mane of the lion? To think of a creature having a pouch in which to carry her young family, and from which they may occasionally be seen peeping like so many juvenile bipeds from a huckster's panniers, is surely a most whimsical idea. Think of what a monstrous crime pocket-picking must appear to a female kangaroo with a charge of children. Australia presents another good living joke in her celebrated ornithorhyncus, where we see a creature like a rat, but a good deal larger, furnished with a duck's bill and web-feet—an association exactly of the same character with those which human conceit has occasionally formed for emblematical devices, or in the way of buffoonery.

Amongst the feathered tribes there are also numerous traces of comicality. The choler of the turkey-cock never fails to excite mirth. Domesticated ravens come to enter into the humors of the families they live with, and sometimes prove amazingly funny. The whole race of parrots is amusing. Not altogether mechanical is that power they have of repeating droll expressions, under the instruction of human masters and mistresses. By timing their jokes, they often show that they enjoy them. This tribe, as well as the monkeys and mocking-birds, are unquestionably possessed of that same power of imitation which men employ to the excitement of mirth in mimicry and comic theatricals. The mocking-bird is the very Monsieur Alexandre of American ornithology. It can simulate the cry of almost all birds, and the name we give it expresses the purposes for which it employs the gift. One of its favorite waggeries, as is well known, is to gather other birds near it by imitating their cries, and then to disperse them, like a

set of schoolboys at the approach of the master by uttering the cry of the bird of which they stand most in fear.

There are many whimsical things in the vegetable world, though the British Flora is perhaps a more serious goddess than some of her foreign sisters. If we go abroad, we shall find many quaint things in this department of nature. The *broussonetia papyrifera* of Japan and India, from which the article called India paper is made, has leaves all different in form, and each of which seems as if it had had a piece rent out of it, and as if it had been afterwards sewed up again to repair the damage. Here there is as complete an appearance of a familiar human action being imitated in nature, as there is in the junction of the duck's bill to the water-rat's body in the ornithorhyncus. There is exactly that disarrangement of the fibres of the leaf, and that appearance of puckering at the seam, which would be seen in a piece of checkered cloth, worn by a mendicant, which, having had a narrow section taken out of it, had been hastily *basted* together without any regard to the joining of the checkers or to smoothness of surface. The well-known fly-trap strikes the mind with all the effect of a joke. The leaf stands temptingly open; a poor fly pops in for shelter or food; no sooner has it set its foot on the bottom, than some sensitive fibres are affected, and the cilia at the top close in upon the intruder, empounding him as effectually as if a boy had taken him and closed him up in a box. The doings of a human economy are also curiously coincident with those of the pitcher-plant of the east. To the footstalk of each leaf of this plant, near the base, is attached a kind of bag, shaped like a *pitcher*, of the same consistence and color as the leaf in the early state of its growth, but changing with age to a reddish purple. It is girt round with an oblique band or hoop, and covered with a lid neatly fitted, and moveable on a kind of hinge or strong fibre, which, passing over the handle, connects the vessel with the leaf. By the shrinking or contracting of this fibre, the lid is drawn open whenever the weather is showery, or dews fall, which would appear to be just the contrary of what usually happens in nature, though the contraction is probably occasioned by the hot and dry atmosphere, and the expansion does not take place till the moisture has fallen and saturated the pitcher. When this is the case, the cover falls down, and it closes so firmly as to prevent any evaporation taking place. The water having gradually absorbed through the handle in the footstalk of the leaf, gives vigor to the leaf itself and sustenance to the plant. As soon as the pitchers are exhausted, the lids again open, to admit whatever moisture may fall; and when the plant has produced its seed, and the dry season fairly sets in, it withers with all the covers of the pitchers standing open.

There are some plants, the flowers of which bear curious, if not ludicrous, resemblances to other objects. The natural order *Orchidaceæ* are remarkable for this property. The flower of the *Oncidium papilio* presents an extraordinary resemblance to a tortoise-shell butterfly, as that of the *Phalenopsis ama-*

bilis does to a white one. *Peristeria pendula* looks like a dove crouching in its nest, and *Coryanthes micrantha* resembles a skeleton's head, with the vertebrae of the neck, finished off with a pair of bat's wings! The flower of the *bee orchis* is like a piece of honeycomb, and, strange to say, the bees delight in it. Then there is the *snap-dragon*, the corolla of which is cleft and turned back so as to look like a rabbit's mouth, especially if pinched on the sides, when the animal appears as if nibbling. If, in like manner, the two petals or nectaries of another well-known plant are pinched, they peep from under the colored calyx, like two great eyes looking out under the cowl of a monk—hence its name of monk's-hood. The flower of the cock's-comb and seed-pod of the *Mostynia proboscidea* bear equally curious resemblances to the objects which have suggested their names. Some kinds of *Medicago* have also curious seed-pods, some being like bee-hives, some like caterpillars, and some like hedgehogs—the last being itself an essentially ludicrous natural object.

A certain grotesqueness of form belongs to the whole order of *Cactaceæ*. The *Cactus senilis* would arrest the most unobservant eye in an exhibition of plants, by the ludicrous peculiarity from which it derives its name. Being simply a kind of stump, covered with long white streaming hair, it exactly resembles the head of an old man! In its native country, this cactus puts on considerably different, but not less ludicrous, appearances. It there grows to the height of ten or twelve, sometimes even to twenty or thirty feet, and when it approaches a flowering state, a circlet of short brown fur appears round the summit, which gradually increases till it takes the very form and appearance of a lady's fur muff! Mr. Lambert, the President of the Linnæan Society, has preserved in glass-cases, in his drawing-room, two specimens, taken from full plants; and a person who has seen them reports to us, that one in particular, about eighteen inches high, precisely looks like an old sable muff. The flowers of the cactus *senilis* are crimson, and are produced in a ring. The reader may therefore judge what a curious figure our old gentleman plant cuts in his native woods, with his body all covered with long white hair, surmounted by a black muff, and above all a wreath of crimson flowers.

Our minds naturally recognise the tall straight stems of the beech and elm as elegant objects. The trunk of the oak is thick, but it conveys the idea of manly robustness and vigor. Most flowering plants in this country have elegant stalks, to which the flower parts are in general neatly and fittingly joined. We never think of smiling mirthfully at any of these objects, but, on the contrary, are disposed to regard them with amusing and serious admiration. How different are these cactuses, with their incomprehensible lumpy angular stems, masses of green vegetable matter, decorated quaintly along the edges with prickles, while here and there a flower sticks out, looking as oddly placed as would a man's head if it projected from his side or stuck upon his knee. It is the *Cactus speciosissimus* which is so particularly liable to this description. To the dark crimson

flowers which ornament its stem, succeeds the fruit, a thing which one would at first suppose to be an egg, till tasting it he would imagine it a gooseberry! In their native country they rise thirty or forty feet high, without a single branch or a single leaf, and it is generally upon the tops of mountains that they grow. Pæping, a German botanical traveller in Brazil, says, that in that country, a hill-top bristling with the *cactus speciosissimus*, resembles nothing so much as a hog's back!

Then we have the creeping *cereus* (*cereus flagelliformis*), which looks like a number of cats' tails tied together, and hung over a flower-pot, with a few crimson flowers stuck into them irregularly. The spines with which these hanging stems are completely covered, are what give them the cats' tail appearance; they have no leaves, but the tails are sometimes forked. The leaf cactus (*Epiphyllum phyllanthoides*) is of totally different but equally quaint form, the stems appearing to consist of a series of leaves stuck into each other, and having notches in the sides from which spring the flowers. The porcupine cactus (*echinocactus*) has a round ball-like stem, often with projecting angles like a lady's reticule, covered with hard sharp spines. The flowers of this genus appear thrown carelessly on the stem, and not to belong to it. We might expatiate upon the eccentricities of this order of plants for half a day, but shall content ourselves with adverting to that crowning conceit manifested by one of the family, of blowing in the middle of the night—emblem apt and true of a certain class of whimsical mortals.

Every one has heard of *lusus nature*—sports of nature—things which she was supposed to produce in the way of freak, and as exceptions from her ordinary laws. Fossil shells, for example, were considered as *lusus nature*, no one being able to understand how, if they had been originally real shells of marine molluscs, they could ever have got into those deep-seated rocks where they were found embedded. It is now believed that there are no such things as *lusus nature*, every one of her organic creations being formed after a distinct type, and designed for a particular purpose in creation, just as there is no character used in a printed book but what there is a type for in the compositor's case, and is liable to appear accordingly in other printed books of the same language. The true sports of nature are to be seen in the many grotesque forms of her legitimate and recognised children, animals and plants, and in the whimsical powers and properties which she has assigned to many of at least the former class. With regard to grotesque forms in plants and animals, it may be said that these things are perhaps not absolutely grotesque, and that it is only in consequence of some law of our minds that we think them so. This, we conceive, may be the case without in the least detracting from the force of what has been said; for how can we judge of any thing but by virtue of and in accordance with the habits of our minds? Undoubtedly, if the cheek of the fair young maiden affects us with the sense of beauty, as truly does the figure of the Barbary ape affect us with the sense of comicality. So, also, of the powers and

properties of many animals. The chatter of the parrot, the strut and crow of the cock, the wretched bray of the ass, the capers of the young goat, and the pranks of the kitten, all affect us with the same risibility as the humor of a Mathews or the wit of a Sheridan. To come finally to man, he has been endowed with both the power of creating mirth and the power of enjoying it. He has a faculty of the ludicrous in his mental organization, and muscles in the face whereby to express the sensation in its well-known form of laughter. Some are born with such a predominance of the ludicrous in their nature, and such wonderful powers of awakening risibility in their fellow-creatures, as to seem to have been mainly designed, as far as the worldly utility of their existence is concerned, for this purpose. This is a class of men particularly apt at perceiving the comicalities of the lower animal and vegetable worlds. While others see only what is painful and melancholy in the scene around them, they are conscious only of what is merry and ridiculous, and spend the part of their lives that is devoted to common sensation in a constant flow of self-generated humor.

We would fain, from all that has been said, establish the importance of the comical in the mundane economy. It seems to us that it cannot be necessarily a reprehensible frivolity—to however absurd purposes it may occasionally be perverted—when we see traces of it springing directly from the common Origin of all things. Time and place may be necessary for its proper development amongst assembled human beings, but this is no more than what may be said of all things. There is a time to laugh and a time to weep. Man, it is true, in his blind zeal for what his higher sentiments dictate, has sometimes acted as if to smile were a sin. He has, strange to say, thought that an invariable gloom and sadness was the proper habit of mind in which to live, as being more agreeable to the Deity. But when we look into the book of nature, we see these ideas completely contradicted. We there find types of being which must have been grotesque and whimsical in their forms, since long before there was such a thing as the human mind to regard them either in one light or another. We see jocularities and merriments in animals which existed before man, and to which no moral error can be imputed. Finally, we see man himself organized so thoroughly for mirth, that his very health is liable to be improved by it. Well, indeed, might Grecian imagination include Thalia amongst the children of Jove.

THE COUNTRY.

It has been very well said by a celebrated author, that "great cities are the graves of the human species." Another author has observed, that if the havoc committed upon the human race by the unwholesome atmosphere and pernicious habits of great and populous places were equally made in the country, the human kind could only be perpetuated by a continual series of special miracles. Great cities would, in

fact, very soon be depopulated, were not the havoc which death makes in them continually repaired by the influx of population from the country. The atmosphere of populous places is, in truth, being perpetually poisoned and corrupted. Putrid animal and vegetable substances necessarily abound in them; high walls and crowded houses obstruct the free passage of the air; and while miasmata thus created and confined are poisoning the atmosphere, thousands of human beings are breathing it, and, of course, adding to its impurity. It is impossible that such a state of things should be otherwise than unfavorable to human health, and destructive of human life.

In the country, on the other hand, every circumstance is favorable to man. The air, the scenery, the nature of his occupations, the habits of life which those occupations superinduce, and the exemption from the perpetual strife and agitation which are almost inseparable from a town life, render his life not only much more pleasant, but much more healthful, and, upon the average, much more extended.

Had we all a free choice as to a town or a country life, few, we apprehend, would hesitate as to embracing the former. But such is not, and cannot be the case. Towns are necessary. The residents in the country need a thousand things which can only be produced by the association of great numbers of men. Husbandmen are necessary to cultivate the earth; but they must have tools, and apparel, and furniture, and houses, and these can only be produced by the residents in towns.

Happily, the dispositions and tastes of men are as various as the circumstances in which they are placed by their Creator. The dwellers in the free air and beautiful scenery of the country would shrink from being compelled to pass their lives amid the smoke and bustle of a populous town. The inhabitants of the town, contrariwise, would tremble at the darkness and stillness which mark the night-time in the country, and would be rendered uneasy by that very calm, which, to a lover of nature, is so exceedingly delightful and inspiring. All this is ordained for the wisest purposes, and for our happiness and welfare. All are thus rendered contented with their condition, and efficient in their employment.

But the pure air of the country, and its exceedingly beautiful scenery, have so excellent an effect upon the human health, and upon the human heart, that we recommend our readers never to neglect a proper opportunity of inhaling the one and beholding the other. The busiest and most important avocations afford some few snatches of leisure; and these can never be better or more wisely employed than in seeking out the beauties of nature in their native haunts. During three-fourths of the year the country presents a perfect succession of beauties to the eye of taste, and of enjoyments to the well-attuned soul; and there are few indeed who cannot contrive to quit the busy hum and bustle of the town for a brief space, during one or the other of those periods.

'To enrich my mind and purify my heart, to keep my tongue still and my arm active, to eat slowly and sleep quickly; this is all my philosophy.



The Hat-Battery, or "Kettle," with men employed in Wetting, Rolling, Pressing, "Ruffing," and Blocking the Hat-Bodies.

A DAY AT A HAT-FACTORY.

THE early history of our manufactures frequently excites a smile at the quaint and energetic manner in which some of the old writers denounce the fashions of their times; but while we are often disposed to agree with them in ridiculing the strange forms of dress which have been adopted at different periods, we must withhold our assent to the principles of their commercial economy, which are often short-sighted in the extreme.

Philip Stubbs, an English writer of the Elizabethan age, published, in 1585, his 'Anatomie of Abuses,' in which, among other things, the costume of the time is made the subject of censure. After anatomizing ladies' dresses, and discoursing on the iniquities of ruffs and furbelows, he visits the wardrobes of the other sex for a similar purpose, and thus speaks of the then fashionable hats:—"Sometimes they use them sharp on the crown, peaking up like the spear or shaft of a steeple, standing a quarter of a yard above the crown of their heads, some more, some less, as please the fancies of their inconstant minds. Some others are flat and broad on the crown, like the battlements of a house. Another sort have round crowns, sometimes with one kind of band, sometimes with another, now black, now white, now russet, now red, now green, now yellow; now this,

now that, never content with one color or fashion two days to an end. And thus in vanity they spend the Lord's treasure, consuming their golden years and silver days in wickedness and sin." But the material pleases him as little as the form and color:—"And as the fashions be rare and strange, so is the stuff whereof their hats be made divers also: for some are of silk, some of velvet, some of taffetie, some of sarcenet, some of wool; and, which is more curious, some of a certain kind of fine hair. These they call *Bever Hats*, of twenty, thirty, or forty shillings price, fetched from beyond the seas, from whence a great sort of other vanities do come beside."

What would be the surprise of Philip Stubbs, if he could now witness the extent to which the "vanity" of "Bever Hats" influences the commercial arrangements of England; the importation of beaver and musquash furs from North America, of neutria furs from South America, of wools from various parts of Continental Europe, of gums, resins, and dyes from almost every part of the globe! If he found, too, that one single firm gives employment to fifteen hundred persons in making hats of various kinds, and that the value of all the hats made in Great Britain in one year is probably not much less than three millions sterling, he would perhaps cease to include "beaver hats" in his list of abuses.

To mark the advance of the world in this respect,

since the time of Stubbs, we propose to consider briefly the present state of the hat manufacture, and describe the various processes through which the material passes from its "raw" state to the finished hat.

If a dozen individuals to whom the subject is new were asked, "How is a beaver hat made?" it is not improbable that we should receive a dozen different answers. One would think it is cast in a mould; another, that the beaver's fur, skin and all, is stiffened and shaped; a third, that the fur is in some way woven into a kind of cloth, and put on a stiff foundation; but perhaps not one would have an idea of the beautiful process of *felting*, which is the groundwork of the whole theory of hat-making. A beaver hat consists mainly of two parts,—the *body* and the *covering*; the former of which is made of fine wool and coarse fur, mixed, felted, stiffened, and shaped; and the latter of beaver fur, made to adhere to the body by the process of felting. Wool and fur constitute therefore the main ingredients employed. For hats of inferior quality, coarse wool is employed for the body, and coarser fur, or sometimes fine wool, for the covering.

The term *fur*, in a general sense, refers to the hairy coating of such animals as the beaver, bear, marten, minx, hare, and rabbit. The skins of these animals, when merely dried after being stripped from the body, are called *peltry*; when the skin of the inner side has been converted into a sort of leather, by a peculiar process of tanning, the skins obtain the name of *furs*, in a restricted sense; and the term is still more restricted when applied to the hairy coating cut from the skin, and presented in the form of delicate filaments.

Now it is in the last-named form that fur is useful to the hatter; and the furs to which he gives the preference are those of the beaver, the musquash, the neutria, the hare, and the rabbit, of which the first is by far the most valuable. The beaver inhabits the districts of North-West America, where its peculiar habits of life have given rise to many marvellous tales, the truth of which is now more than doubted. The hairy surface of beaver skins is of a brownish color, but is not that to which the hatter attaches value; for this animal has two kinds of hair on its skin, the innermost of which is short, implicated, and as fine as down, and the outermost thicker, longer, and more sparing. Of the separation of these two kinds we shall speak presently.

Neutria is the fur of a small animal called the *coypou*, the *quoyia*, or the *Myopotamus Bonariensis*, found in various parts of South America. The long or coarse hairs are generally of a reddish color; and the inner or soft hairs, brownish ash color. It was not until about thirty years ago that hatters, influenced by the high price of beaver fur, began to use neutria fur; but since that time the employment of them has become so extensive, that one million neutria skins have sometimes been imported into England in one year.

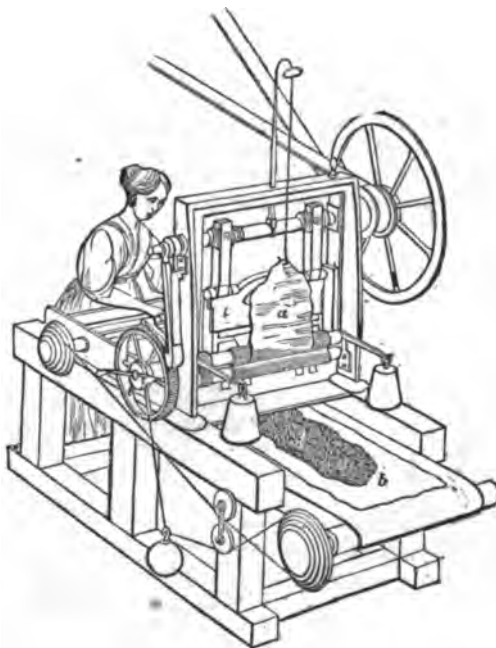
The *Musquash*, or *Mus Zibethicus*, is a North American animal, about the size of the common rabbit, and covered, like the beaver and the coypou, with two kinds of hair or fur, having different degrees of

fineness. The name *musk rat* is sometimes given to this animal, on account of its secretion of a peculiar fluid having the odor of musk.

The fur of *hares* and *rabbits* is so well known as to render a description unnecessary.

We have digressed a little, in order to show the nature of the furs employed by the hatter. The skins, or pelts, on being conveyed to the factory, are rather greasy and dirty, and are therefore cleansed with soap and water; this is effected in the same large washing house where the wool is cleansed. When the pelts are dried and required for further processes, they are carried to the "pulling-room," where a number of women, seated on stools, are employed in pulling out the coarse outer hairs from the skins: these coarse hairs are utterly useless to the hatter, and, if preserved at all, are sold for stuffing cushions and such like purposes. Each woman lays a pelt on her lap, or on a low bench, and, by means of a knife acting against the thumb, tears out the larger hairs, her fingers and thumb being guarded by a stout leather shield.

We next trace the progress of the pelt into the "cutting" or "cropping" room. The annexed machine for cropping may be thus described. A long, broad, and sharp blade, having the edge downwards, works very rapidly, with a chopping action; and the pelt being introduced between the blade and a support beneath, the fur is cut from it with a precision that nothing can exceed. The impression on the mind of a visiter is that the pelt must inevitably be chopped to shreds, but, by some admirable adjustment of mechanism, the fur is removed without the



Cutting-Machine. *a*, the skin, passing between rollers, after the fur has been cut from it; *b*, the fur deposited in a light layer on an endless cloth.

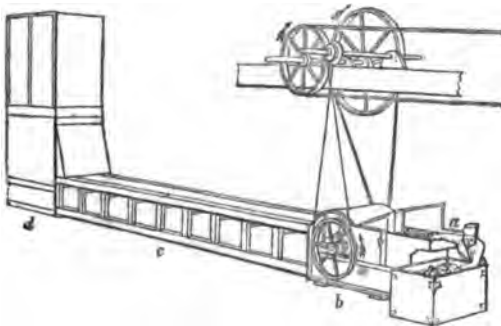
skin being cut. The female who attends the machine puts it in or out of work when required, guides the pelt through it, collects the filaments of fur, &c. Such outer fragments or small pieces of the pelt as do not lose their fur by the action of the machine, are laid on a table, and women, by the aid of small instruments shaped somewhat like a cheese-cutter, remove the remaining fur. The denuded skins are useless to the hatter, and are sold at a small price to size-makers.

We have said that the women in the "pulling" room cut, tear, or pull out the long coarse hairs from the pelts, and that these hairs are useless to the hatter. But it is impossible completely to separate the coarse from the fine fur by these means; and, therefore, the fur, when cropped from the pelt by the machines, is conveyed to the "blowing-room," finally to effect the separation. The action of the blowing machine is exceedingly beautiful, and may, perhaps, be understood without a minute detail of mechanism. A quantity of beaver or other fur is introduced at one end, near a compartment in which a vane or fly is revolving with a velocity of nearly two thousand rotations in a minute. We all know, even from the simple example of a lady's fan, that a body in motion gives rise to a wind or draught; and when the motion is so rapid as is here indicated, the current becomes very powerful. This current of air propels the fur along a hollow trunk to the other end of the machine, and, in so doing, produces an effect which is as remarkable as it is valuable. All the coarse and comparatively valueless fur is deposited on a cloth stretched along the trunk, while the more delicate filaments are blown into a receptacle at the other end. Nothing but a very ingenious arrangement of mechanism could produce a separation so complete as is here effected; but the principle of action is not difficult to understand. If there were no atmosphere, or if an enclosed place were exhausted of air, a guinea and a feather, however unequal in weight, would fall to the ground with equal velocity; but in ordinary circumstances, the guinea would obviously fall more quickly than the feather, because the resistance of the air bears a much larger ratio to the weight of the feather than to that of the guinea. As the resistance of air to a moving body acts more forcibly on a light than on a heavy substance, so

likewise does air, when in motion, and acting as a moving force. When particles of sand and gravel are driven by the wind, the lightest particles go to the greatest distance. So it is with the two kinds of fur in the "blowing machine," those fibres which are finest and lightest are driven to the remote end of the machine.

We have thus visited those parts of the factory in which the crude materials are prepared for the hatter, and will now, therefore, take our materials to the "body-makers," and witness the processes of forming them into a hat.

The "body," or "foundation," of a good beaver hat is now generally made of eight parts rabbit's fur, three parts Saxony wool, and one part of lama, vicunia, or "red" wool. A sufficient quantity of these for one hat (about 2½ ounces) is weighed out and placed in the hands of the "bower." On entering the "bowing-room," a peculiar twanging noise indicates to the visitor that a stretched cord is in rapid vibration; and the management of this cord by the workman is seen to be one of the many operations in hating wherein success depends exclusively on skillful manipulation. A bench extends along the front of the room beneath a range of windows, and each "bower" has a little compartment appropriated to himself. The bow is an ashen staff, from five to seven feet in length, having a strong cord of catgut stretched over bridges at the two ends. The bow is suspended in the middle by a string from the ceiling, whereby it hangs nearly on a level with the work-bench, and the workman thus proceeds:—the wool and coarse fur, first separately and afterwards together, are laid on the bench, and the bower, grasping the staff of the bow with his left hand, and plucking the cord with his right hand by means of a small piece of wood, causes the cord to vibrate rapidly against the wool and fur. By repeating this process for a certain time, all the original clots or assemblages of filaments are perfectly opened and dilated, and the fibres, flying upwards when struck, are by the dexterity of the workman made to fall in nearly equable thickness on the bench, presenting a very light and



Blowing-Engine. *a*, spot on which the fur is placed; *b*, box containing the revolving fan; *c*, hollow trunk through which the fur is blown; *d*, receptacle where the finer fur is deposited.

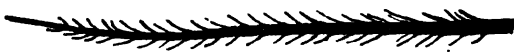


Bowing.

soft layer of material. Simple as this operation appears to a stranger, years of practice are required for the attainment of proficiency in it.

The point in the routine of processes at which we have now arrived requires a brief consideration of the operation of felting, on which the whole manufacture of a beaver hat depends. Felting is a process whereby animal fibres are made to cohere and to form a kind of cloth, without the aid of weaving, plaiting, knitting, sewing, or any analogous processes—warmth, moisture, and friction being the means by which it is effected. There is reason to believe that the process of felting was known in early times, and that the tents of the Tartars, as well as some articles of clothing, were produced by these means; but the evidence on this point is rather indistinct. At what time felted wool was first employed for making hats, it would be difficult now to say; but there is a legend current among some of the continental hatters which gives the honor to St. Clement, fourth bishop of Rome. Most fraternities love to have a patron saint, when they can find one; and those hatters who regard St. Clement in this light inform us that this holy man, being forced to flee from persecutors, found his feet to be so blistered by long-continued travel, that he was induced to put a little wool between his sandals and the soles of his feet. On continuing his journey, the warmth, moisture, motion, and pressure of the feet worked the wool into a uniformly compact substance. Finally, the wanderer, observing the useful nature of this substance, caused it to be introduced in the manufacture of various articles of apparel.

But leaving St. Clement and his felted "inner soles," we may remark that the philosophy of felting was not understood until the microscope was applied to the examination of animal fibres. It was then found that the fibre, whether of wool or fur, is surrounded by a vast number of minute teeth projecting obliquely from the central stem. As these teeth are very sharp, and are turned in one direction, they present an obstacle to the motion of the fibre in that direction, but enable it to glide easily in the opposite one; just as an ear of barley, when placed stalk uppermost within the cuff of the coat-sleeve, will soon work its way up to the shoulder by the motion of the arm. In some woolly fibres the irregularities appear like concentric cups, rather than sharp teeth.



Microscopic view of a fibre of beaver fur.

When a heap of such fibres is rubbed and pressed, and the fibres are made to curl slightly by the action of warmth and moisture, they twist around each other, and the teeth interlace so tightly as not to separate. So complete, indeed, is the entanglement of fibres thus produced, that a coat made from cloth manufactured solely by the felting process has been known to last in wear ten years.

The purpose which the serrated structure of hair or fur is intended to answer is matter for conjecture. With respect to the double fur of such animals as the

beaver, the following opinion has been offered: that, as the beaver passes much of its time in the water, the little projections from the filaments of the inner fur may serve as receptacles whereby the water is prevented from reaching the skin, and that the outer fibres may perhaps act like valves, which, when closed, shield the animal from cold, and when open permit the evaporation of water from the inner fur, and likewise permit respiration to go on from the pores of the skin.

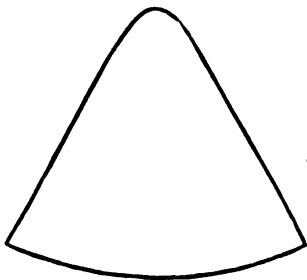
But whatever be the purpose which these arrangements answer in the animal economy, it is evident that the minute serrations on the fibres of fur and wool are the means of the felting; this being understood, we shall be able to comprehend how the fur and wool are worked up into the form of a hat, and we therefore return to the "bowing" room. The bowed materials for one hat are divided into two portions, each of which is separately pressed with a light wicker frame, and afterwards with a piece of oil-cloth or leather, called a "hardening-skin," until, by the pressure of the hands backwards and forwards all over the skin, the fibres are brought closer together, the points of contact multiplied, the serrations made to link together, and a slightly coherent fabric formed. These two halves, or "batts," are then formed into a hollow cap by a singular contrivance. One of the "batts," nearly triangular in shape, and measuring about half a yard in each direction, being laid flat, a triangular piece of paper, smaller in size than the batt, is laid upon it, and the edges of the batt, being folded over the paper, meet at the upper surface, and thus form a complete envelope to the paper. The two meeting edges are soon made to combine by gentle pressure and friction, and the other "batt" is laid over the first in a similar way, but having the meeting edges on the opposite side of the paper. The doubled layer, with the enclosed paper, are then folded up in a damp cloth and worked by hand; the workman pressing and bending, rolling and unrolling, until the fibres of the inner layer have incorporated with those of the outer. It is evident, that were there not a piece of paper interposed, the whole of the fibres would be worked together into a mass by the opposite sides felting together; but the paper maintains a vacancy within, and when withdrawn at the edge which is to form the opening of the cap, it leaves the felted material in such a form as to constitute, when stretched open, a hollow cone.

Our visit to this part of the factory has been somewhat lengthy; but the process of transforming the "bowed" materials into a conical cap is so important, as illustrative of felting, that if this be clearly understood, all that follows will be tolerably plain.

Few "kettles" are the scene of such busy operations as the hatter's "kettle," and few would be so uninviting to a person fastidious as to cleanliness. Imagine a large kettle or boiler open at the top, having a fire beneath it, and eight planks ascending obliquely from the margin, so as to form a sort of octagonal work-bench, five or six feet in diameter, at which eight men may work. The planks are made of lead near the kettle, and of mahogany at the outer

part, and at each plank a workman operates on a conical cap, until the process of felting or "planking" is completed. The "kettle" contains hot water slightly acidulated with sulphuric acid; and, as far as words can do so, the following may convey an idea of the process:—The cap is dipped into the hot liquor; laid on one of the planks and subjected to a long felting process; it is rolled and unrolled, twisted, pressed, and rubbed with a piece of leather or wood tied to the palm of the workman's hand, and rolled with a rolling-pin (see frontispiece). From time to time the cap is examined, to ascertain whether the thickness of the material is sufficient in every part; and if any defective places appear, they are wetted with a brush dipped in the hot liquor, and a few additional fibres are worked in. Considerable skill is required in order to preserve such an additional thickness of material at one part as shall suffice for the brim of the hat. When this felting process has been continued for about two hours, it is found that the heat, moisture, pressure, and friction, have reduced the cap to one half its former dimensions, the thickness being increased in a proportionate degree.

Is not the reader still puzzled to know how or when the hat will make its appearance? We have described numerous materials, but have still produced only a drab-colored, flexible, conical cap, about fifteen inches wide and fourteen high, and without a particle of beaver on its surface. The surface, color, and form are, however, now about to be changed, in the order here indicated.



In the first place the cap is taken to the "water-proofing" room, where the odor of gums, resins, and spirits gives some intimation of the materials employed. Gum-lac, gum-sandrach, gum-mastic, resin, frankincense, copal, caoutchouc, spirits of wine, and spirits of turpentine, are the ingredients (all of a very inflammable nature) of which the water-proofing composition is made. This is laid on the cap by means of a brush, and the workman exercises his skill in regulating the quantity at different parts, since the strength of the future brim and crown depends much on this process.

After another heating in a hot room, called "stoving," by which the spirit is evaporated, the exterior of the cap is scoured with a weak alkali, to remove a portion of the gummy coating, and thereby enable the beaver fur afterwards to cling to the woolly fibres of the cap.

Now, for the first time, we have to direct our at-

tention to the fine beaver fur, the purchase and preparation of which are so costly. The washing, plucking, cropping, and blowing departments we have already visited, and have seen the fibres of fur divided into two qualities, of which the finer is that to which the hatter attaches value. This finer quality, which appears to have been formerly known by the name of "flox," was, in bygone times, used not only for hats, but also for hosiery purposes, in allusion to which Dyer, in his poem of the "Fleece," has these lines:—

"The beaver's flox
Gives kindest warmth to weak enervate limbs,
When the pale blood slow rises through the veins."

The fur, being bowed very carefully by a smaller bow than that employed for wool, is spread out into a layer, and by means of the "hardening-skin" is pressed and worked into a very delicate and light felt, just coherent enough to hold together. This layer, which is called a "ruffing," or "roughing," is a little larger than the cap body; and to unite the two, another visit to the "kettle" is necessary. The cap being softened by submersion in the hot liquor, the "ruffing" is laid on it, and patted down with a wet brush, a narrow strip of beaver being laid round the inside of the cap, to form the underside of the future brim. The beavered cap is then wrapped in a woollen cloth, submersed frequently in the hot liquor, and rolled on the plank for the space of two hours. The effect of this rubbing and rolling is very curious, and may be illustrated in a simple manner: if a few fibres of beaver fur be laid on a piece of broad-cloth, covered with tissue-paper, and rubbed gently with the finger, they will penetrate through the cloth and appear at the opposite side. So, likewise, in the process of "ruffing," each fibre of fur is set in motion from root to point, and enters the substance of the felt cap. The hairs proceed in a pretty straight course, and just enter the felt, with the substance of which they form an intimate union. But if the rolling and pressing were continued too long, the hairs would actually pass through the felt, and be seen on the inside instead of the out; the workman, therefore, exercises his judgment in con-



Felting the fur.

tinuing the process only so long as is sufficient to secure the hairs in the felt firm enough to bear the action of the hat-brush in after days.

At length the cap is to assume somewhat the shape of a hat, before it finally leaves the "kettle." The workman first turns up the edge of the cap to the depth of about an inch and a half; and then draws the peak of the cap back through the centre or axis so far as not to take out the first fold, but to produce an inner fold of the same depth. The point being turned back again, produces a third fold; and thus the workman proceeds, till the whole has acquired the appearance of a flattish circular piece, consisting of a number of concentric folds or rings, with the peak in the centre. This is laid on the "plank," where the workman, keeping the substance hot and wet, pulls, presses, and rubs the centre until he has formed a smooth flat portion equal to the intended crown of the hat. He then takes a cylindrical block, on the flat end of which he applies the flattened central portion of the felt; and by forcing a string down the

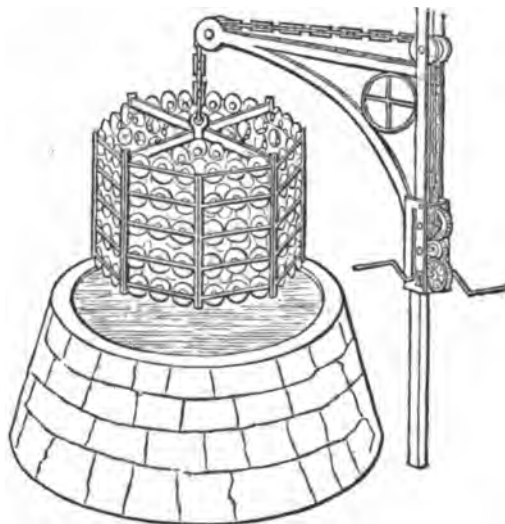


Shaping the Hat.

curved sides of the block, he causes the surrounding portion of the felt to assume the figure of the block. The part which is to form the brim now appears as a puckered appendage round the edge of the hat; but this puckered edge is soon brought to a tolerably flat shape by pulling and pressing.

We here terminate our visit to the "blocking-shop." The conical cap has been converted into a hat with a flat brim; and we take leave of the "kettle," with its hot acid liquor, its wet planks, its clouds of steam, and its ingenious attendants. We will suppose the hat to have been dried in a "stoving-room," and will then place it in the hands of the "shearer." In an appropriate room, this workman raises and opens the nap of the hats, by means of a peculiar sort of comb; and then shears the hairs to any required length. Connoisseurs in these matters are learned as to the respective merits of "short naps" and "long naps;" and by the shearer's dexterity these are regulated. The visitor recognises nothing difficult in this operation; yet years of practice are necessary for the attainment of skill therein; since the workman determines the length of the nap by the peculiar posi-

tion in which the long light shears are held. A nap or pile as fine as that of velvet can be produced by this operation.

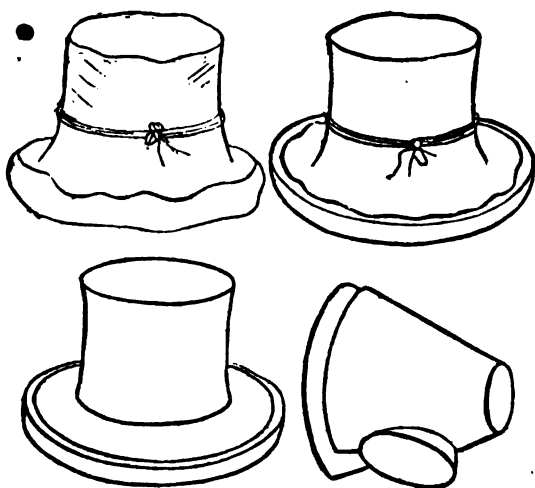


Dyeing the Hats.

We will now visit the "dye-house," where the hats exchange their drab or gray hue for a black one. The dyeing ingredients are log-wood and some metallic salts, boiled in certain proportions in soft water.

The caldron with the dyeing ingredients being ready, a number of hats are fixed upon blocks, and the blocks, by means of a hole at one end of each, are fixed to brass pegs inserted in a large skeleton frame, so that the hats shall not touch each other. The frame is then lowered into the caldron, and turned in such a manner as to allow all the hats to be submerged in the dye; after which the frame is hauled up, and the hats allowed to drain for thirty or forty minutes. This alternate submersion and partial drying is repeated twelve or fifteen times, until every fibre of the hat,—felt as well as nap,—is thoroughly dyed. This is followed by soaking and washing, which frees the surface from impurities; and the hat is then again "stoved." A few subsequent processes remove certain irregularities of shape, which the hat has acquired by repeated submersions in the dye-liquor.

We next visit the "finisher's" department. A boiler is so arranged as to yield a jet of steam, over which the hat is held until thoroughly softened; and having a block shaped in every part nearly as the hat is intended to be, the "finisher" pulls, rubs, and presses the hat, until it assumes the form of the block; after which the nap is stretched, turned in any required direction, and smoothed by various sets of brushes, small cushions of velvet, and heated irons. The adjoining cuts show three successive stages in the shaping of the hats, from the first rough "blocking" to the production of a flat and smooth-edged brim while on the finishing-block; likewise a beaver bonnet on the block by which it is shaped.



But we have not yet finished our hat. However carefully the process of "blowing" may be performed, in order to separate the coarse fibres of the fur from the more delicate, there are always a few of the former left mingled with the latter; and these are worked up during the whole of the subsequent processes. Women are employed, therefore, after the hats have left the "finishers," in picking out with small tweezers such defective fibres as may present themselves at the surface of the hats.

Lastly, the hat is placed in the hands of a workman whose employment requires an accurate eye, and a fertile taste in matters of shape and form; this is the "shaper." He has to study the style and fashion of the day, as well as the wishes of individual purchasers, by giving to the brim of the hat such curvatures in various directions as may be needed. Simple as this may appear, the workman who possesses the requisite skill can command a high rate of wages. Fortunate is the "shaper" who during a ramble to any place of fashionable resort can espy a new form of brim,—a curl here, a depression there, and can imitate it at his workbench,—he will please his employer, and profit himself.

Thus we arrive at the finished state of the beaver hat; and may now leave it to run its career through all weathers,—wet and dry,—cold and heat,—till it is destined to be replaced by a new one. Whether we are contented with the "shocking bad hat," or have to endure the uneasy pressure of the stiff and glossy new one with fortitude, we must assuredly acknowledge that a beaver hat, whether considered with reference to the peculiar processes by which it is produced, or to the number of distinct sets of work-people (from twenty to twenty-five) through whose hands it passes, occupies an interesting and important place in the manufacturing history of this country.

As the number of beavers caught annually has greatly declined, the price of beaver-fur has of late years increased; and this circumstance has led to the production of a kind of hat which presents some resemblance to beaver, and yet may be produced at a low rate. This is the *silk* hat, the manufacture of

which has gone through several stages of improvement, by which even an humble "gossamer" now presents a neat and glossy exterior.

Silk is wholly incapable of the process of felting, and therefore cannot be employed in the same manner as fur and wool. The body of the silk hat is made either of coarse felted wool, or of some light material such as willow or stiffened cambric; and on this is placed a covering or hood of silk plush, sewn to the proper size for the hat.

The bodies are made in a very rough way, by shaping the willow, cotton, or felted wool round blocks, and using a substance of extra thickness for the brim. A varnish cement is used to join the various parts; and a resinous stiffening composition is laid over the outer surface. Some time before the plush hood is laid on, the body is coated with a peculiar varnish, which, being softened by a heated iron after the hood is laid in its proper position, causes the plush to adhere to the foundation. This process is the most difficult in the silk-hat manufacture; for not only must the plush be made to adhere in every part, but the seam or joining up the side of the hat must be made as little visible as possible. No sewing is here employed; but the two meeting edges are brought precisely together, pressed down with a heated iron, and the silk shag brushed over the joint.

The minuter details of the silk-hat department we must pass over; for, so far as they differ from beaver hatting, they are of much less interest. Beaver hat makers look down with some little scorn on the operations of silk hatting; and certainly, so far as regards manipulative skill acquired by long practice, the former branch of handicraft is by far the most remarkable; but still the silk hatter appeals with such moderation to the purse of the purchaser, that we could not afford to lose sight of him. In this country the number of silk hats annually manufactured far exceeds that of felted ones.

MEMORY.

In a paper read a short time ago by Sir Henry Marsh, at a meeting of physicians, on the subject of memory, we find the following intelligent observations, tending to show that memory, like everything else, is susceptible of cultivation, and must always less or more depend on the proper exercise of the faculties of the mind:—

"Wherever there are traces of mental manifestation, there the attribute of memory is to be found—variously distributed, but always bearing invariable proportion to the amount and extent of intellectual development. As the instincts of the animal become more numerous, so the reach of memory increases; and if, in our observations of facts, beginning with the lowest, we ascend in the scale of animated nature, we shall discover a gradual augmentation of mind and memory till we arrive at man, who, in the possession of both, stands alone and pre-eminent above every other inhabitant of the earth. It is

on the score of those superior faculties, moral and intellectual, by which man is distinguished, that he, amongst animals, is designated the image of his Maker; but how valueless had all these endowments been, had not that of memory been superadded! Of all the mental powers, none arrests so forcibly the attention of all classes of persons as this of which we treat. Its utility in every sphere and condition of life is so palpable that it cannot pass unobserved. It is also so remarkably affected by disease, so strikingly exhibited in infancy and childhood, so altered in character by old age, and displayed in such strong features, though limited in extent, in the warring and predatory life of savage and uncivilized man, and so largely bestowed in some one distinct form upon particular individuals, that it is, above all other mental manifestations, that which never fails to obtrude itself upon the notice of even the unobservant and thoughtless.

The events and occurrences of childhood are not imprinted permanently on the mind. In all instances in which I have made inquiry, I cannot trace permanent impressions farther back than to about two years and a half old. A lady told me lately, that she left India when only three years old—that she distinctly recollected having been carried in a palanquin, and having embarked on board what then appeared to her an enormous vessel, in which she sailed to Europe; all else had escaped from her memory. The first event of my own life which I can recollect is a fight with a cock. From that period onwards to the age of eight years, the facts and events which I am able to recall are few. In precocious children it may be different; but of these so many die prematurely, that we cannot gather many facts. In old age, too, memory gradually fails. We may say, then, that the period of memory is the period of the consciousness of personal identity. In point of fact, we live only as long as we can recall past impressions; all else in life, both in infancy and extreme senility, and the time spent in sleep, is a blank. Thus the period of human life is contracted within a smaller span than the number of years usually reckoned upon. The progress of memory from infancy to mature years in an individual of an energetic, active, and cultivated mind, may not inaptly be compared with some great river—at its source a streamlet, enlarging by degrees as it advances, collecting materials for expansion from a thousand springs, spreading wider and wider as it rolls onwards, and becoming ultimately one mighty and majestic mass of waters—deep, broad, and beautiful—till at length it is mingled with and lost in the ocean. Such is the progress of memory in the human mind. Memory cannot be without a previous impression. An impression cannot be made upon the mind without *attention*. Attention presents itself to our view under two very distinct forms; one, instinctive and necessary, which takes place whether we will or not; the other constrained, or the result of mental effort. So likewise memory, or the recalling of past impressions, is either necessary and spontaneous, or it is the result of a mental effort. The first is termed simple memory; the second, recollection. The

more active and vigorous each mental faculty, the more excited is the attention to congenial objects, the more forcible is the impression made, and consequently the more tenacious and permanent the memory of such impressions. The order of the sequence then is—active faculties, strong impressions, vigorous memory.

I have often thought that, if in children the various powers of memory were closely observed, an index of the mental faculties would thence be derived most valuable in the conduct of education. Believing, as I do, that many intellectual faculties have each its own proper memory, it follows, as a necessary consequence, that in proportion to the strength and activity of each faculty is the vigor, readiness, and retentiveness of the memory attached to it. Hence, by carefully studying the memory, and ascertaining by well-conducted experiment where it is vigorous and retentive, and where comparatively defective, we should be materially assisted in arriving at a knowledge of the real condition of the mental faculties of the individual whom we undertake to educate.

In this our sublunary state of existence, mind and matter are so inseparably united, that the one cannot manifest its functions without the other. The brain is the material instrument of the mind. The human brain, in number and depth of convolutions, in the proportionate quantity of gray or cineritious matter, in size, compared with the other portions of the nervous system, in development of parts posteriorly, superiorly, and anteriorly, exceeds that of all other animals. If the brain be deranged in function, or diseased in structure, the memorial faculties suffer. The brain sympathizes with remote parts, and with the digestive organs in particular; we all know and feel to what an extent our reasoning powers and memory are influenced by the state of the stomach. Often in my boyhood, and even subsequently, I have endeavored to repeat at night words or propositions which I was anxious to imprint on the memory, and repeat correctly. At night I could perform my task but very imperfectly; on awaking in the morning, and repeating the effort, not one word was forgotten. Sympathy with remote parts—high mental excitements and emotions, such as grief, intense pleasure, intense application—various poisonous substances, such as opium, alcohol, disease, injury—all these, by disturbing the functions of the brain, derange variously, and to a greater or less extent, the mental manifestations."

We add the single observation, that young persons who feel deficient in memory, may rest assured that the defect is caused less by inferior mental capacity, than want of application at right times and on right objects. The avoidance of trifling pursuits and undue gratifications of the senses, at the same time directing the mind to subjects of a useful and ennobling tendency, will strengthen the reflective faculties, and that is the cultivation of the memory.

Be slow in choosing a friend, and slower to change him; courteous to all; intimate with few; slight no man for poverty, nor esteem any one for his wealth.

H O R T I C U L T U R E .



All that concerns human beings has been made upon a principle of benevolence.—TURNER.

THIS glorious truth is nowhere more strongly exemplified, than in the display which, at the season of autumn, is made by the Orchard Trees. The rosy-cheeked apples begin to breathe perfume from their umbrageous chambers; and the peaches and nectarines add their fragrance to the universal sweetness. "Against the wall, the grapes have put on that transparent look which indicates their complete ripeness, and have dressed their cheeks in that delicate bloom which enables them to bear away the bell of beauty from all their rivals." Melons have attained their greatest perfection. Walnuts weigh down their mighty branches to the earth, and seem to invite the hand of the gatherer; and the sober-colored filbert peeps from her shady recesses like prudence amid profusion. This superabounding goodness on the part of the Creator, may well rescue us from all the foolish fears which are sometimes expressed, lest population should one day outgrow the productive powers of Nature. Our bulwark against this is, that plants possess a principle of infinite improbability. The six-leaved rose of the fields has become the hundred-leaved rose of our gardens. The austere crab of the woods is known as the father of twelve hundred varieties of apple; filberts are the cultivated descendants of the wild hazel; corn-plants, of every kind, are only improved grasses; and the whole kitchen-garden, in like manner, exhibits a series of transformations, little less than miraculous. The dry and stringy have become juicy and succulent; the tall and thin sink down into a luxuriant obesity; colors of all sorts change, new products seem to be created, poisons vanish, and increased and increasing nutriment everywhere abounds. So great are the rewards of industry. Shall we then relax in our exertions? shall we not rather pay still greater obedience to the command—"REPLENISH THE EARTH," and as we work, learn to admire those beautiful laws by which God has made the replenishing of the earth so easy and so delightful? It is man, and not his Maker, who deprives so many thousands of their "daily bread;" the reaper gathers in the harvest, and too often retires from the denuded fields to starve; but this does not originate in any natural deficiency: famine results immediately from human sources.

Cultivated fruits are the first indications of civilization, and their quantity a measure of its degree of perfection. In this way our orchards may become very pretty histories of the times, as they are in England. There, the crab, the sloe, and the hazel-nut, describe their aboriginal condition, the plum, the apple, the cherry, the pear, and the peach, record their colonization by the Romans; the fig-tree, the vine, and the raspberry, tell of their crusades to the Holy Land; the gathering of these together in the gardens of monasteries, amid the ruins of which they still flourish, evidence the all-powerful dominion of the Romish church, in those dark ages when she was the sole conservator of knowledge; the great orchards which adorn the mansions of the old nobility, announce the glorious era of Queen Elizabeth, when mind first burst into the glorious liberty of inductive thought; the universal diffusion of fruit-trees in poor men's gardens, demonstrates the mild and intelligent character of the succeeding age.

We shall now take a brief review of the autumn fruits, with a few remarks upon each, such as we trust will assist in adding the pleasures of understanding to the enjoyment of sight and taste.

APPLE (*Pyrus Malus*). The apple is the most durable of fruits, and flourishes in all northern latitudes. It is a close attendant upon civilization, and by a long course of ingenious cultivation, has been divided into twelve hundred varieties. France, till very recently, taking the precedence of England in all matters of mind, has the honor of having originated most of the varieties, and hence the names of the different sorts of apples are chiefly derived from the French. In the reign of Charles I., apple-orchards were first planted in Herefordshire, by Lord Scudamore; and now they are found in every garden and hedgerow in that county. They thrive so abundantly in the western counties, that Devon, Somerset, Worcester, and Hereford, almost exclusively engross the manufacture of cider. The crop, however, is a precarious one, and requires great practical skill and local knowledge to turn it to profitable account. More than twenty thousand bushels of American and French apples are annually exported to England.

THE PEAR (*Pyrus communis*). It is believed that the Romans first introduced the pear into England. Being a very luxuriant fruit, it has always been paid great attention, and was carefully cultivated by the monks. As in the case of the apple, the French have also the honor of originating the best varieties of the pear. At present, nearly seven hundred sorts are enumerated. The tree is very hardy, and many a venerable specimen is still to be found, rearing its time-colored trunks amid the ruins of the chapter-houses and cloisters of departed priests. Perry is the product of the pear.

THE QUINCE (*Cydonia vulgaris*). The quince was first propagated in England in the reign of Henry VIII. It is a handsome but not a very healthy fruit, and is there used more for giving variety to the palling superfluities of the rich man's table, but in our own country for many other purposes. In the reign of Elizabeth, they had become common in the

gardens of the nobility, and are now extensively grown in the south of France, for the manufacture of marmalade. Cultivation has produced eight varieties.

The VINE (*Vitis vivifera*). The cultivation of the grape is coeval with the race of man. Traces of its history are discoverable in the records of every ancient nation. We read of Noah *beginning to be an husbandman, and planting a vineyard*, Gen. ix. 20. Egypt deified its first cultivators; and in later, but now vastly distant times, Bacchus and his brutal satellites became the disgusting patrons of its prostituted virtues. Humboldt is of opinion that the original plant from which the European stock has been derived, grows wild on the shores of the Caspian Sea, and that from thence it passed into Greece, and successively into Sicily and the south of France, from whence it was carried by the Romans into Germany and Britain. It continued to flourish in England till the thirteenth century, when large vineyards were planted, and soon became common over the country. Large quantities of wine were manufactured, and formed the common drink of the country till, after the Reformation, it was superseded by ale, when the vineyards were suffered to go to decay. Grapes are cultivated over the whole of the temperate and part of the tropical zones of the northern hemisphere. Different nations have different methods of training the vine: some upon horizontal trellis-work, others in festoons between upright poles, and others again fasten them to the face of a wall. The Persian vine-dressers train it up the surface of a wall, and to curl over the top to the other side, which they do by tying a stone to the end of the tendrils. This may probably illustrate Jacob's blessing upon his darling son, Genesis xlix. 22: "Jacob is a fruitful bough, even a fruitful bough by a wall, whose branches run over the wall." The vine, particularly in Turkey and Greece, is frequently made to encircle a well, which it shades in a very picturesque and agreeable manner. The vine lasts to a great age, and frequently grows to an enormous size. A tree remarkable for both particulars is now growing at Hampton Court; it covers an extent of sixteen hundred and ninety-four feet, and seldom bears less than two thousand bunches annually. The different sorts of vines are almost as various as the places in which they grow. Among the Romans, Virgil declares, "the number of vines was so great, that a man might as well attempt to count the sands on the seashore, or the billows of the ocean in a storm, as make a catalogue of them."

Upwards of eight thousand tons of raisins are annually exported into England, at a duty of about £160,000. The currants of the grocers' shops, of which nearly six thousand tons are yearly consumed in England, are small dried grapes, chiefly the produce of the Ionian islands.

The ELDER (*Sambucus nigra*). This tree is a native of Great Britain. It grows with such rapidity, that it will sometimes make shoots of ten feet in length in one season. A very agreeable and sedative wine is fermented from the berries, and forms a large addition to the poor man's comforts. Every part of the tree furnishes a recipe to the village herb-

doctor, and many highly useful ones to the regular physician.

The MELON (*Cucumis melo*). This delicious fruit is usually understood to be a native of Central Asia. The Romans were exceedingly fond of it, and used forcing-stoves for its cultivation. Its introduction into England is unknown; but its regular cultivation has been recorded since the time of Elizabeth. The melon is difficult of digestion, and is in many other respects an unhealthy fruit. The colors of many of them are gorgeous beyond description, and would amply repay a close inspection. Nearly eighty varieties are cultivated.

The CUCUMBER (*Cucumis sativa*). The cucumber, like the melon and other members of the gourd family, is chiefly a native of the burning countries of the East, where, by a kind arrangement of Providence, it serves, by its fragrant juiciness, to correct the inflammatory thirst of the parched inhabitants. It has been produced in England from the earliest periods, but was not subjected to regular cultivation till the time of Elizabeth; many varieties have been the result.

The PEACH and NECTARINE (*Amygdalus Persica*). Of the peach, independently of minor differences, there are two distinct varieties, the peach and the nectarine: the former with a downy coat, and the latter with a smooth one. The identity of these two varieties has been well ascertained, the difference originating by culture. The peach is a native of the tropical regions; and was brought from Persia into Europe by the Romans. It was first cultivated in England during the reign of Henry VIII.; and under the improving care of the horticulturist has, at the present day, reached the number of two hundred varieties. This favorite fruit thrives abundantly in our own country.

The APRICOT (*Prunus Armeniaca*). The apricot is a native of Persia, where it is called the "seed of the sun." It has steadily followed the steps of civilization, and is abundantly found over all the various regions of the northern hemisphere. Woolf, the gardener to Henry VIII., a man whose wonderful exertions in the improvement and introduction of fruits entitle him to imperishable gratitude, first carried the apricot to England in 1524. Many varieties woo the capricious appetite.

The PLUM (*Prunus domestica*). The plum is a native of Asia, but is now plentiful all over Europe. In obedience to that improveable principle which all vegetables possess, it has rewarded the patient labors of the gardener, by presenting him with nearly three hundred luscious varieties. The Orleans Plum is a proud monument of the early greatness of France; and most of the other sorts are bright witnesses of her beneficent labors. The prunes, or "pruants," as they are corruptly pronounced, are dried French plums, and are largely imported.

The WALNUT (*Juglans regia*). The walnut-tree is one of the finest ornaments of a farm, and is as useful as beautiful. The ripe nuts, as all those who love "wine and walnuts" can tell, are an agreeable fruit; and the green nuts, pickled, add a rich gusto to that favorite dish—a beef steak. A fine oil

is also extracted from them. The walnut is believed to be a native of Persia; and has been common in England since the Roman conquest.

The CHESTNUT (*Castanea vesca*). Chestnuts are very farinaceous, and are capable of being manufactured into bread. On the continent of Europe a light pastry is made from them. The Romans—of whom it has been said, that they adopted every useful art or product of the countries they conquered, and a higher eulogium was never pronounced on any nation—these unprejudiced heroes first brought the chestnut into Europe.

The HAZEL-NUT (*Corylus avellana*). The hazel is a native of Britain; but, like the pigeon, the horse, and every other thing which has been found serviceable to man, it has shot forth, under his stimulating care, into large and durable varieties. The filbert, the cluster-nut, and many others, are the honors which surmount the sweat-wreathed brows of our ancestors, and proclaim to all the world, that, by virtue of his immortal principle, man has not held an *unfruitful* dominion over the vegetable empire, and that the world is so contrived, that well-directed industry cannot be exerted without large and profitable results.

CHRONOLOGY OF SOME IMPORTANT INVENTIONS, &c.

MAPS, globes, and dials were first invented by Anaximander, in the sixth century before Christ. They were first brought into England by Bartholomew Columbus, in 1489.

Comedy and tragedy were first exhibited at Athens, 562 B. C.

Plays were first acted at Rome, 239 B. C.

The first public library was founded at Athens, 526 B. C.

The first public library was founded at Rome, 167 B. C.

The first public library was founded at Alexandria, 284 A. D.

Paper was invented in China, 170 B. C.

The calendar was reformed by Julius Cæsar, 45 B. C.

Insurance on ships and merchandise first made in A. D. 43.

Saddles came into use in the fourth century.

Horse-shoes, made of iron, were first used A. D. 481.

Stirrups were not made till about a century later. Manufacture of silk brought from India into Europe, 551 A. D.

Pens first made of quills, A. D. 635.

Stone buildings and glass introduced into England, A. D. 674.

Pleadings in courts of judicature introduced, A. D. 788.

The figures of arithmetic brought into Europe by the Saracens, A. D. 991.

Paper of cotton rags invented towards the close of the tenth century.

Paper made of linen in 1300.

The *degree of Doctor* first conferred in Europe, at Bologna, in 1130; in England, 1209.

The first regular *bank* was established at Venice, in 1157. The bank of Genoa was established in 1407; that of Amsterdam in 1609; that of England, 1694.

Astronomy and geometry brought into England, 1220.

Linen first made in England, 1253.

Spectacles invented, 1280.

The art of weaving introduced into England, 1330.

Musical notes, as now used, invented 1380.

Gunpowder invented at the city of Cologne by Schwartz, 1320–40.

Cannon first used at the siege of Algeziras, 1342.

Muskets in use, 1370.

Pistols in use, 1544.

Printing invented at Mentz, by Guttemberg, 1440.

Printing introduced into England, 1471.

Post offices established in France, 1464; in England, 1581; in Germany, 1641.

Turkeys and chocolate introduced into England from America in 1520. Tobacco introduced into France by Nicot, 1560.

First coach made in England, 1564.

Clocks first made in England, 1568.

Potatoes first introduced into Ireland and England in 1586.

The circulation of the blood discovered by Harvey, 1619.

The first newspaper published in England, 1588; first in Venice, 1630; first in France, 1631.

Coffee introduced into England, 1641.

Tea introduced into England, 1666.

The steam engine invented by the Marquis of Worcester, 1655.

Fire engines invented, 1663.

Turnpikes first made in England, 1663.

Bayonets invented in Bayonne (whence their name), 1670. First brought into use at the battle of Turin, 1693.

Stereotype printing invented, 1725.

New style of calendar introduced into England, 1752.

Air balloons and ærostation invented in France, 1782.

The first mail carried in England by stage-coach, 1785.

The cotton gin invented in Georgia, 1794.

Life boats invented in England, 1802.

The first steamboat on the Hudson, 1807.

The streets of London first lighted with gas, 1814.

LITTLE—SMALL.—Etymologically, *little* suggests an idea of levity, and *small*, of slenderness. Both words are used without much discrimination, when speaking of material objects; but *little* is more contemptuous, and is oftener applied metaphorically. We say, a fat little man, but never a fat small man. It was a mean thing, a little action; never a small action. A short thread is a little thread, yet only the slender is called a small thread.



MILTON AND HIS LOCALITIES.—1. The Portrait, from an etching by Cipriani, after a picture formerly in the possession of Jacob Johnson. 2. Ludlow Castle, from a view drawn in 1750. 3. Chalfont, from a wood-cut in a series of views of Poets' residences. 4. Christ's College, Cambridge, from a print in Ackermann's "Cambridge." 5. St. Giles's, Cripplegate, with part of the London Wall, from a view in Wilkinson's "Londiniana."

LOCAL MEMORIES OF GREAT MEN.

MILTON.

THE popular feeling towards great men never shows itself more gracefully than in the traditions it delights to preserve of the localities honored by their presence; than when—with all the zeal of the devotee in Catholic countries, displaying to some travel-worn

but enthusiastic pilgrim the shrine towards which he has been so long journeying—it points out the house in which this great poet lived, or the tree that that philosopher had planted. And most universal is the reverence in which such feelings have their origin. With what pleasure we all trace the course of the lives of those illustrious men, step by step, from the house where they first saw the light, to that where, for the last time, their fading vision was

cheered by its beams! With what gratification we busy ourselves in identifying any of the circumstances of those localities—the home—the scenery—the neighborhood—with the growth and development of their minds, or with particular passages of their writings. With what peculiarly grateful delight we receive any fresh testimonies of their worth, any new evidences of their unswerving constancy to the great principles they lived but to expound. Such considerations apply with peculiar force to the great poet whose local memories we are here about to illustrate; for in his case, party and sectarian intolerance has done its worst to prevent or destroy such reverential respect; and with what effect?—None, we may answer, of a permanent kind;—and as to the temporary,—had Milton required any other support than his own steady soul at all times furnished, he would have found it in the opinions of some of the best and purest men in his own country, in the general esteem and admiration in which he was held abroad. It is a matter suggestive of much useful reflection, that whilst foreigners of the most distinguished European reputation were seeking in the streets of the city for the birth-place of Milton, the man whom they thus honored was in hourly danger of his life, and perhaps only avoided the scaffold by strict concealment.

That birth-place (on Dec. 9, 1608) was in Bread Street, Cheapside, the house of his father, an eminent scrivener, and was distinguished by a sign representing the armorial ensign of the family—the Spread Eagle. The house was left to the poet, but just at the period when its possession would have been most valuable to him, he lost it by fire: the great fire of London in 1666. There his education was sedulously commenced under the care of a person named Young, afterwards master of Jesus College, Cambridge. He was next sent to St. Paul's school, and from thence, at the age of fifteen, to Cambridge. Christ's College, of which, in 1624, he became a member, was originally founded in 1456, by Henry VI., under the name of God's House, but afterwards incorporated into the present establishment and liberally endowed by the Lady Margaret, Countess of Richmond, a great-granddaughter of John of Gaunt, and the mother of Henry VII. The buildings consist of a handsome quadrangle or principal court (130 feet by 120), and of a second court built on two sides, that next the garden and fields forming an elegant façade about 150 feet long. In the garden there is an interesting memorial of Milton, a mulberry-tree planted by his own hand, and which at once carries back the thoughts to the period when the young poet-student paced to and fro along its walks, book in hand, sometimes utterly wrapped in its contents, sometimes letting it fall listlessly by his side, to commune with a still greater spirit—his own sublime imagination! This garden was doubtless a favorite place; for he disliked the surrounding country, it was too level and unpicturesque; and, as he complained, had no soft shades to attract the Muse. Those scenes, however, have a tradition of their own in connexion with Milton, and one too that would be exceedingly interesting, if we could have more faith

in its truth than the poet's biographers seem to think we should have. The story first appeared in a newspaper published in the latter part of the last century:—"It is well known that in the bloom of youth, and when he pursued his studies at Cambridge, this poet was extremely beautiful.* Wandering one day, during the summer, far beyond the precincts of the University, into the country, he became so heated and fatigued, that reclining himself at the foot of a tree to rest, he shortly fell asleep. Before he awoke, two ladies, who were foreigners, passed by in a carriage. Agreeably astonished at the loveliness of his appearance, they alighted, and having admired him (as they thought) unperceived, for some time, the youngest, who was very handsome, drew a pencil from her pocket, and having written some lines upon a piece of paper, put it with her trembling hand into his own. Immediately afterwards they proceeded on their journey. Some of his acquaintance, who were in search of him, had observed this silent adventure, but at too great a distance to discover that the highly favored party in it was our illustrious bard. Approaching nearer they saw their friend, to whom, being awakened, they mentioned what had happened. Milton opened the paper, and, with surprise, read these verses from Guarini:—"Ye eyes! ye human stars! ye authors of my liveliest pangs! If thus, when shut, ye wound me, what must have proved the consequence had ye been open?" Eager, from this moment, to find out the fair incognita, Milton travelled, but in vain, through every part of Italy.

At college Milton soon distinguished himself; and although Dr. Johnson, in a well-known passage, says, he "is ashamed to relate, what he fears is true, that Milton was one of the last students in either university that suffered the public indignity of corporal correction," we have Milton's own grateful testimony to the kind and enlightened treatment he there met with. In answer to one of his slanderers, later in life, who had said that, "after an inordinate and riotous youth spent at the University," he had been "at length vomited out thence," Milton writes, "for which commodious lie, that he may be encouraged in the trade another time, I thank him; for it gives me an apt occasion to acknowledge, publicly, with all grateful mind, *that more than ordinary favor and respect which I found above any of my equals* at the hands of those courteous and learned men, the fellows of the college," &c. This statement appears to us perfectly decisive that Dr. Johnson was mistaken.

From Cambridge Milton went into Buckinghamshire, where his father, now retired from business, had purchased an estate at Horton, near Colnebrook; and where, in the parish church, his mother lies buried. Here he is supposed to have written the 'Arcades,' 'L' Allegro,' and 'Il Penseroso,' 'Lycidas,' and 'Comus.' The 'Arcades' was performed at Harefield Place, the seat of the Countess Dowager of Derby, and about ten or twelve miles from Horton, that lady's children being the actors. The personal accomplishments of the Countess, and the woody

* He was called the 'Lady of his College'; a designation he did not much relish.

scenery of Harefield, are supposed to be referred to in the following lines from 'L' Allegro :—

"Towers and battlements it sees
Bosom'd high in tufted trees,
Where, perhaps, some beauty lies,
The cynosure of neighboring eyes."

The house at Horton was pulled down about the year 1798. Through his acquaintance with the Countess of Derby, Milton was most probably introduced to the Earl of Bridgewater, her relation; and perhaps first heard from her lips the incident which there is reason to believe formed the groundwork of 'Comus.' "I have been informed from a manuscript of Oldy's," says Warton, "that Lord Bridgewater, being appointed lord-president of Wales, entered upon his official residence at Ludlow Castle with great solemnity. On this occasion he was attended by a large concourse of the neighboring nobility and gentry. Among the rest came his children, in particular Lord Brackley, Mr. Thomas Egerton, and Lady Alice,

'To attend their father's state
And new intrusted sceptre.'

They had been on a visit at a house of their relations, the Egerton family, in Herefordshire; and, in passing through Heywood Forest, were benighted, and the Lady Alice was even lost for a short time. This accident, which, in the end, was attended with no bad consequences, furnished the subject of a mask for a Michaelmas festivity, and produced 'Comus.' Lawes, also, the musician, who set the composition to music, dedicated the work to Lord Brackley, remarking that "the poem received its first occasion of birth from himself and others of his noble family." It was in the autumn of 1634 that 'Comus' was performed in the noble hall of Ludlow Castle, and by the very personages whose adventure had given rise to its production—Lord Brackley, his brother, and the Lady Alice. Both hall and castle are greatly changed since that day, though the latter still presents, in its bold and lofty site, its massy ruins, and towering keep, in its embattled wall, and immense fosse, the proofs of its former strength and grandeur. Of its history—with all the great sieges it has known (having been invested by King Stephen, Simon de Montfort, Henry VI., and at different periods of the parliamentary war), we must not stop to speak. We quit Ludlow Castle, therefore, merely remarking as we pass that in one of the towers of the castle, Butler, another great poet, composed several cantos of his 'Hudibras.' On the death of his mother, in 1637, Milton travelled through Italy; but returned on hearing of the political troubles which broke out in England about that time. He then lodged for a time in St. Bride's Churchyard, Fleet Street, where he commenced the education of his nephews, the Philips's, on a new system; but soon removed to a handsome house situated in a garden in Aldersgate Street. In 1643 he married the daughter of a gentleman of Forest Hill, Oxfordshire. Sir William Jones has given a long and interesting account of a visit to this place, where he states that Milton resided for some time; and he is supported in this statement by a tradition still current

among the villagers, and by the undoubted fact that Milton was intimately acquainted with his wife's family so early as 1627. The poet's house, he states, was close to the church; the greater part of it, however, had been pulled down, and the remains then formed a part of an adjacent farm. This marriage was at first unhappy; the lady went home to her father's house professedly for a time only, but soon announced to Milton her determination to remain there entirely. Milton consequently repudiated her, and published several treatises in justification of his right to do so. He proceeded also to pay his addresses to a beautiful young lady, when his wife, either alarmed at that circumstance, or at the misfortunes of her family, produced by their adherence to the king, met him unexpectedly one day at the house of a relation in St. Martin's-le-Grand; and falling on her knees, conjured him to forgive her. Milton found that, in the words of his own 'Paradise Lost,' where Eve is praying Adam's forgiveness for the sin into which she had led him,—

"Soon his heart relented
Toward her, his life so late, and sole delight,
Now at his feet submissive in distress."

He not only forgave her, but, when her family was reduced to utter distress by the ruin of the royal cause, received the whole—father, mother, brothers, and sisters—into his house to "protection and free entertainment." Before, however, he could accommodate so large a household, he had to obtain a much larger house; for his own father was now living with him, and his scholars had increased: accordingly he removed to Barbican. About this period was written the most splendid of all his prose works, the 'Areopagitica, or a Speech for the Liberty of Unlicensed Printing.' After the death of his wife's father, and the removal of the rest of the family, Milton went into a smaller house in Holborn, the back part of which opened into Lincoln's Inn Fields. This was in 1647. On the death of the king, two years later, Milton produced his tract on 'The Tenure of Kings and Magistrates,' proving that it is lawful to call to account a tyrant or wicked king, &c. The ability displayed in this and similar political productions doubtless recommended him to the Council of State of the Commonwealth, which, having determined to use the Latin language in all negotiations with foreign nations, appointed Milton its Latin secretary. An official residence in Scotland Yard, then called Whitehall, was now provided for him; and it is said that here he used to hold a weekly table for the entertainment of foreign ministers and persons of learning, such especially as came from Protestant states. In 1651 Milton quitted Scotland Yard, in accordance with the arrangement of the parliamentary commissioners connected with the management of Whitehall, and removed to a pretty garden-house in Petty France, Westminster,* where he remained until within a few weeks of the Restoration. Here his wife died in childbed in

* Here also the late Jeremy Bentham lived for many years, and was accustomed to point out the garden, to visitors, as that in which Milton had frequently walked.

1653 : to the same house three years later he brought a second partner, and from the same house followed her, dying under similar circumstances, also to the grave. His twenty-third sonnet, that 'On his deceased Wife,' shows how deeply her loss had sunk into his mind :—

"Methought I saw my late espoused saint
Brought to me, like Alcestis, from the grave,
Whom Jove's great son to her glad husband gave,
Rescued from death by force, though pale and faint.
Mine, as when wash'd from spot of child-bed taint
Purification in the old law did save,
And such as yet once more I trust to have
Full sight of her in Heav'n without restraint,
Came, vested all in white, pure as her mind :
Her face was veil'd, yet to my fancied sight,
Love, sweetness, goodness in her person shin'd
So clear as in no face with more delight,
But oh, as to embrace me she inclin'd,
I wak'd, she fled, and day brought back my night."

'To feel the full pathos of the last line, we must remember that Milton was now blind. He had been warned by his physicians several years before, whilst engaged in one of his great political tracts, that he must desist, or he would lose his sight. His duty would not, he thought, permit him to desist; and so the prediction was verified.

At the Restoration Milton withdrew from the impending storm by taking shelter in secrecy with a friend in Bartholomew Close; and it is stated that a mock funeral was got up, so imminent was his danger considered. On the 27th of August, 1659, his books were burnt by the public hangman (an act in every way worthy of the prince who had Cromwell's mouldering bones taken up and exposed on a scaffold): in three days after, however, the Act of Indemnity appeared, by which it was supposed that he was relieved from danger. If the fact were so, his apprehension afterwards might have been a matter of form only. At all events, he was apprehended, but discharged on payment of exorbitant fees. Milton referred to this period when he described himself as having fallen on evil days and evil tongues, and with darkness and with danger compassed round: Richardson, indeed, says "he lived under continual terror of assassination." In the course of the next three or four years, Milton, whose mind appears to have been somewhat changeable as regarded his residences, lived first in Holborn, near Red Lion Fields; then in Jewin Street, where he married his third wife; and lastly in Artillery Walk, leading to Bunhill Fields, where he ended his "mortal pilgrimage." When the plague began in London, in 1665, Elwood, the Quaker, who acted occasionally as his secretary, took a house for him at Chalfont, in Buckinghamshire, "a pretty box," as he called it. Here Elwood visited him one day; and "after some common discourses," as he himself informs us, "had passed between us, he called for a manuscript of his, which being brought, he delivered to me, bidding me take it home with me, and read it at my leisure; and when I had so done, return it to him, with my judgment thereupon. When I came home, and set myself to read it, I found that it was that excellent poem which he entitled 'Paradise Lost.' At Chalfont, also, 'Paradise Regained' is supposed to have been entirely written. When the danger

from infection had ceased, Milton returned to Bunhill Fields; and here he published his great poem. At the door of this house he used to sit in warm sunny weather, to enjoy the fresh air, clad in a coarse gray coat; and there, as well as in his rooms, receive the visits of the numerous distinguished persons who came to see and converse with him. His domestic habits were still, as they had always been, "those of a sober and temperate student. Of wine or any strong liquors he drank little. In his diet he was rarely influenced by delicacy of choice; illustrating his own admirable rule,

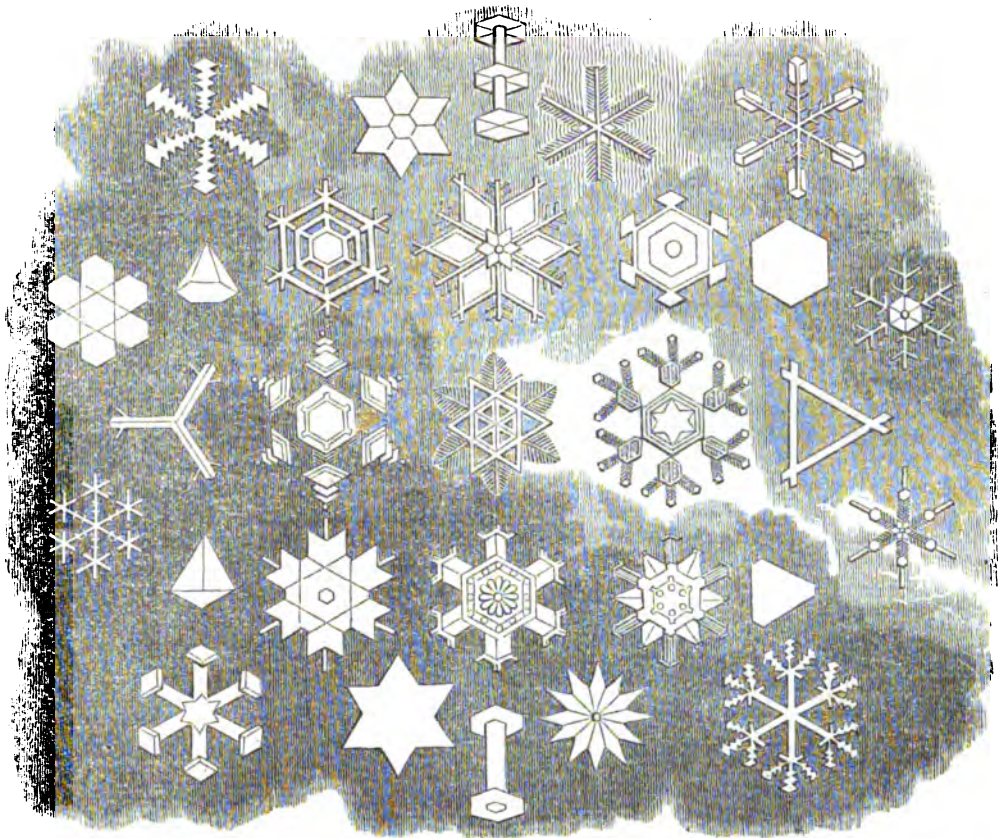
'The rule of 'Not too much,' by temperance taught,
In what thou eat'st and drink'st; seeking from thence
Due nourishment, not gluttonous delight.'

He once delighted in walking and using exercise, and appears to have amused himself in botanical pursuits; but, after he was confined by age and blindness, he had a machine to swing in for the preservation of his health. In summer he rested in bed from nine to four; in winter to five. If at these hours he was not disposed to rise, he had a person by his bed-side to read to him. When he first rose, he heard a chapter in the Hebrew Bible, and commonly studied till twelve; then used some exercise for an hour; then dined; afterwards played on the organ or bass viol, and either sang himself or made his wife sing, who, he said, had a good voice, but no ear. It is related that when educating his nephews, he had made them songsters, and sing from the time they were with him. No poet, it may be observed, has more frequently or more powerfully commended the charms of music than Milton. He wished perhaps to rival, and he has successfully rivalled, the sweetest descriptions of a favorite bard, whom the melting voice appears to have often enchanted, the tender Petrarch. After his regular indulgence in musical relaxation, he studied till six; then entertained his visitors till eight; then enjoyed a light supper; and after a pipe of tobacco and a glass of water, retired to bed."

On Sunday, the 8th of November, 1674, the great poet died: so serene was his departure, that the attendants in the room at the time were unaware of the precise moment. He was buried next to his father, in the chancel of Cripplegate Church. A marble bust, by Bacon, with a tablet beneath, was erected in the middle aisle by the munificence of the late Mr. Whitbread. The bed on which he died was presented to the poet Akenside, who, we need hardly say, treasured it as a most precious gift.

The apple was a native of Italy; and when the Romans had tasted the richer flavor of the apricot the peach, the pomegranate, the citron, and the orange, they contented themselves with applying to all those new fruits the common denomination of apple, discriminating them from each other by the additional epithet of their country.—Gibbon.

Many seem to entertain a secret abhorrence for the retired walks of life. To be known is their most anxious wish. Some prefer even an infamous notoriety, to a virtuous and honorable obscurity.



Form of Snow Crystals.

SNOW-CRYSTALS.

THE comparison of snow to "treasure," in Job xxxviii. 22, might suggest a reference to the extremely diversified and very beautiful forms of the crystals of which the flakes of snow are composed. When the air is calm and the cold intense, as in the arctic regions, these crystals are observed in the most extensive variety, and in the most regular and beautiful forms; and as the extreme north was considered as the great storehouse, so to speak, of cold and of all the phenomena which cold produces, one might venture to suspect a reference to the polar regions as to the "treasures of the snow." Captain Scoresby, who gave much attention to this and other arctic phenomena, has figured ninety-six varieties of these crystals, and we have caused part of his representation to be copied. He divides all the forms into five principal classes, for the description of which we may refer to his work. If we might venture to suppose that the ALMIGHTY referred Job to such things as affording evidence of his wisdom and power, we should perceive a peculiar beauty in such a reference, from the fact that the examination of these crystals conveyed exactly this impression to the mind of Captain Scoresby. He says: "The extreme beauty and endless variety of the microscopic objects perceived in the animal and

vegetable kingdoms, are perhaps fully equalled, if not surpassed, in both particulars of beauty and variety, by the crystal of snow. The principal configurations are the stelliform and hexagonal; though almost every variety of shape of which the generating angles of 60° and 120° are susceptible, may, in the course of a few years' observation, be discovered. Some of the general varieties in the figures of the crystals may be referred to the temperature of the air; but the particular and endless modification of similar classes of crystals, can only be referred to the will and pleasure of the FIRST GREAT CAUSE, whose works, even the most minute and evanescent, and in regions the most remote from human observation, are altogether admirable."

INDUSTRY.—There is no art or science that is too difficult for industry to attain to; it is the gift of tongues, and makes a man understood and valued in all countries and by all nations; it is the philosopher's stone, that turns all metals, and even stones, into gold, and suffers not want to break into its dwelling; it is the north-west passage, that brings the merchant's ship as soon to him as he can desire. In a word, it conquers all enemies, and makes fortune itself pay contribution.



Flower-Boat.

CHINESE BOATS.

THE immense variety of boats which crowd the waters of China may be divided into two classes: those that have eyes, and those without them. To the former class belong the military and trading junks that navigate the "great sea." They are nearly in the shape of a new moon, and as clumsy a craft as could well be contrived, having sterns at least thirty feet above the water, and bows the third of that height. The Emperor not only affords no encouragement to improvement, but actually discourages it, in the exaction of foreign port duties from junks constructed on improved principles. These vessels have always a great eye painted on each side of the bows. This usage had its origin probably in some superstition. If a Chinaman is questioned as to its cause, his reply is, "Have eye, can see, can saavey; no have eye, no can see, no can saavey."

The craft used upon the inland waters of China vary from the rudely constructed junk, down to the small "Sanpan." There are boats appropriated to pleasure parties called "Hwa-chow," i. e. a flower-boat: they are frequently occupied by the wealthy classes in summer evenings, and are for the most part stationary; being moored together in rows, secured by strong hempen cables.

The material used in building boats in China is oak and teak: very little iron or copper is used, the bolts, knees, and stanchions being composed entirely of wood, as well as their ponderous anchors. The seams are all secured or payed (a nautical term) with chinam, which is a strong white substance like mortar, made from the Chinam tree: it much resembles putty; becomes as firm as rock, and never starts, and the seams thus secured by it are perfectly safe and water-tight. The deck-planks of Chinese boats are never secured, although well contrived and dovetailed into one another: they are made to take up at pleasure, as underneath are kept all the culinary utensils, spare cordage, and apparatus required.

The masts are made of bamboo, and the sails of ratan sewn together, and fastened to bamboo joints

running parallel, so that the sails open in the manner of a fan, and can be reefed at pleasure by closing any of the joints, each angle having a rope or sheet attached which joins on to one which can be belayed at pleasure or held in the hand. The rudder is a large unwieldy affair, universally perforated with small holes, which may be set down as a wonder for the wise.

The river craft, and small boats particularly, are generally propelled by sculling, a method which is made absolutely necessary by the number of boats always in motion. This scull, which is usually of a large size, moves on a pivot fixed aft and lashed securely on one side, and the skill with which the Chinese perform this operation confirms the old proverb that "Practice makes perfect;" for the boat is made to dart forward at a rapid rate, and in a line as direct as any well-managed sailing vessel could pursue. In the small sanpan and tanka boats, which are managed chiefly by females, in addition to the scull named, a girl sits forward and rows with a small scull fastened to a kind of thole-pin, or the sculler manages it with the foot.



Sanpan.

On the canals and the rivers of the interior, oars are used in addition to the sculls. Mr. Davis, in "The Chinese," thus describes them:—"The oars which they occasionally use towards the head of their boats, besides the scull abaft, are rather short, with broad blades. These are suspended with a loop on a strong peg at the side of the boat, and there is an advantage in its not being always necessary to unship them, as, when useless, they are drawn by the water close to the vessel's side, without any retarding effect. There is besides no friction, nor any noise in a rulloch, and no encumbrance of oars within the boat."

The interior accommodations and fittings up of Chinese boats show great ingenuity, and are adapted in every way to comfort. Large coverings or awnings stretch fore and aft, made of bamboos and ratan, and consist of several divisions, which can be removed either altogether or separately at pleasure: they are quite impervious to the rays of the sun. In

the large chop and flower boats there is a complete upper deck, which is again covered in with an awning: it communicates with the interior of the boat by short steps.

The interiors of the flower and hoppo boats are very tasteful; indeed, they may be compared to floating pavilions: they are beautifully painted, and carpeted, or have a fine floor-cloth of the Chinese manufacture; latticed windows, containing exotic shrubs and flowers, make the interior quite light; the large lanterns are hung in front, and the rear is fitted up with a kind of altar where the Joss (the Chinese deity) is placed. The large boats are divided into two or three compartments, one being dedicated to culinary purposes, the others as sleeping and sitting rooms, and where every comfort is enjoyed the same as in a house on shore. Mr. Davis thus describes one more particularly:—"The travelling barges used by mandarins and opulent persons afford a degree of comfort and accommodation quite unknown in boats of the same description elsewhere; but it must be repeated, that *speed* is a quality which they do not possess. The roof is not less than seven or eight feet in height, and the principal accommodations consist of an ante-room at the head for servants, a sitting-room about the centre of the boat, and a sleeping apartment and closet abaft. All the cooking goes on upon the high overhanging stern, where the crew also are accommodated. There are gangways of boards on each side of the vessel, which serve



Accommodation-Barge.

for poling it along the shallows, by means of very long and light bamboos, and which also allow of the servants and crew passing from head to stern without incommoding the inmates. The better boats are very well lit by glass windows at the sides, or by the thin interior laminæ of oyster-shells. Others have transparent paper or gauze, on which are painted flowers, birds, and other devices, while the partitions, or bulk-heads, of the apartments are varnished and gilded. The decks or floors of the cabins remove in square compartments, and admit of all the baggage being stowed away in the hold. Everything in their river boats is kept remarkably clean, and this habit presents a strong contrast to their general neglect of cleanliness in their houses on shore, which have not the same ready access to water, and are besides often very ill drained. In short, their travelling barges are as much superior to the crank and rickety budgerows of India, as our European ships are to the sea-junks of the Chinese, who seem to have reserved all their ingenuity for their river craft, and to have afforded as little encouragement as possible to maritime or foreign adventure."

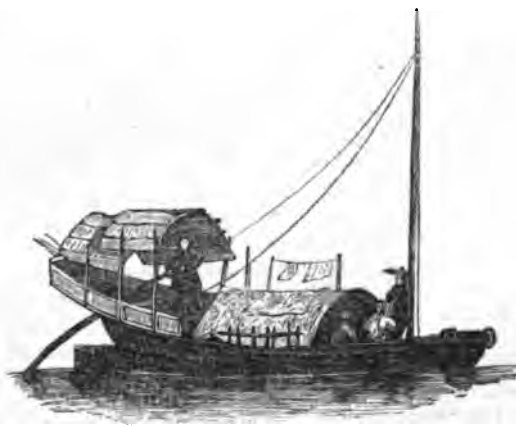
The trading junks are very unwieldy, and having very little keel, besides being so bluff in the stem and stern, will only sail before the wind, therefore

they perform their voyages alternately with the S.W. and N.E. monsoons. One of these boats is described as follows by Mr. Davis, in his "Sketches of China:—" "The most remarkable objects that struck us here were some enormous large salt-junks, of a very singular shape, approaching to a crescent, with sterns at least thirty feet out of the water, and bows that were two-thirds of that height. They had 'bright sides,' that is, were varnished over the natural wood without painting, a very common style in China."

The boats called "Tsau-chuen," and used on the grand canal for the conveyance of grain, are very numerous: there are said to be no less than one thousand belonging to the government: they average about two thousand peculs, or above a hundred tons, but being flat-bottomed, and very high out of the water, they have the appearance of a much greater capacity.

The small "Sanpan," or family-boat, are by far the most numerous. Of this description there are estimated to be upwards of forty thousand on the Canton river near the city, containing a population of more than two hundred thousand souls. These boats are regularly licensed by government. The husband finds employment on shore, while the wife has charge of the floating domicile. These women seek a maintenance in carrying passengers to the neighboring places. The cleanliness of their boats is remarkable. The late Dr. Morrison, speaking of this tribe of people (Tan-hoo), who at Canton live entirely in boats, says:—"They were originally fishermen, who came from the south to Canton. They seem to have been named from the figure of their boats resembling an egg." These boats are from fifteen to twenty feet in length. Some of the old accounts of Canton say, that "on the river live many thousand souls, who never were permitted to come on shore," and these are descendants of Tartars. The people who live in boats originally came from the south, and being a foreign race, were not permitted to dwell on shore; but most of the distinctions between them and the rest of the people were removed by the Emperor Keen-lung, under the influence of general principles of equity.

The chop-boats are employed as lighters in trans-



Chop-Boat.

porting cargoes up and down the river, to and from foreign vessels at Whampoa.

The mandarin boats, or revenue cutters, are very fast craft, and besides masts and sails, pull fifteen or sixteen oars of a side; they have from eighty to one hundred and twenty men, soldiers; their round shields are placed round the outside gunwale, and have a picturesque appearance: there is a poop aft, covered in with handsome ratan awning, which is appropriated to the mandarin and officers; a mounted gun is fitted forward in the stem of the boat, and forms the only piece of ordnance. The crew are armed with matchlocks and javelins, also bows and arrows. These mandarin boats greatly oppress the lower orders in the "Sanpans," taking away from them money or any present they may have received from a foreign ship: it is a process called "squeezing," and should the party make any resistance, they get very roughly handled.

ABSTINENCE FROM FOOD.

ALTHOUGH ordinarily, for the due sustenance of the vital powers, it is necessary that supplies of food should be periodically administered, yet the power of abstaining from sources of nourishment has been sometimes possessed to a great extent. The attention of the curious has been excited, from a remote period even to the present times, by cases in which life has been said to have been protracted during extraordinary long periods without the aid of food; and the annals of England and of other countries abound with such narrations. Thus we are told that one Cicely de Ridgeway, who was condemned for the murder of her husband, in the reign of Edward III., fasted forty days. This, as is stated in a record preserved in the Tower, being attributed to miraculous agency, she was pardoned. One John Scot, being involved in debt, took sanctuary at Holyrood, where he fasted for thirty days. The rumor of this reaching the king's ears, the man was placed under surveillance in Edinburgh Castle, and again fasted for the space of thirty-two days. He was set at liberty, and, repairing to Rome, exhibited his powers of abstinence to Clement VII. In 1603, James Roberts, a surgeon, published, "with the king's privilege," "A true and admirable historie of a mayden of Consolens, in the province of Poictiers, that, for the space of three years and more, hath lived, and yet doth [live], without receiving either meat or drinke, of whom his majesty in person hath had the view, and (by his command) his best and chiefest phisitions have tried all means to find whether this fast or abstinence be by deceit or no."

The "Philosophical Transactions," vol. lxvii., contain a full account of the case of Janet McLeod, who swallowed nothing but a little water for four years. Although the evidence upon which many cases are based seems satisfactory, yet, when the facts related so entirely pass the bounds of credibility, we are justified in rejecting them. This is seen in a remarkable manner in the case of Anne Moore, the fasting

woman of Tutbury. This woman pretended to have lived some years without food, and had been subjected to a watching by her skeptical neighbors, from which ordeal she came out triumphantly. Her credit now firmly established, crowds visited her from all parts, so that she was enabled to place a considerable sum of money in the funds, resulting from the fees she charged for admission into her apartment. Yet, after all, this woman, when submitted to a second well-concerted system of watching, instituted by persons of the first respectability, confessed the imposture, and admitted that her friends had from time to time clandestinely supplied her with small portions of food. There can be no doubt that the great majority of these marvellous cases were also impositions. But yet there is as little doubt that persons have been known to pass an immense period without food, especially if they have had access to moisture, which seems to have a wonderful power in assisting the endurance of privation. Thus Anne Moore herself indubitably fasted nine days while under her last surveillance. So, too, many accounts we have of persons buried by snow or other accidents confirm the latter part of the observation. Elizabeth Woodcock, to whom this calamity occurred, near Cambridge, supported life for eight days by sucking portions of the snow by which she was surrounded. A young man, confined in a coal-pit by a burst of water, remained there undiscovered for twelve days; and a woman, who lost her way in a coal-pit, preserved life for three days by means of her own milk, and for fifteen other days upon water. In experiments instituted by Redi, he found that fowls deprived of all food, solid or fluid, died on the ninth day, while one to which he gave water lived to the twentieth day.

Persons subject to various diseases can occasionally bear the diminution of food to a great extent, but it is in those who are the victims of hypochondria or insanity that this is seen in the most remarkable degree.

Dr. Willan records the case of a young man who for sixty-one days took no other food than water to which a little orange juice was added. This person, as well as a hypochondriac cited by Doebel, who fasted forty days, died soon after a return to food. Ponteau mentions a madman who took nothing for forty-seven days but a pint and a half of water per diem, and for thirty-eight of these days remained in the same position. Dr. Francis relates the case of a negro woman, who, believing herself the subject of Obi magic, refused all sustenance for several weeks, during which time she only took two cups of water slightly medicated with wine.

Famine is, perhaps, the most horrible form in which death can make its approaches. The narrations of the dreadful sufferings endured from shipwrecks, sieges, and famines, are but too familiar. A prostration of the vital powers is followed by wild delirium and restlessness, during which the most powerful instincts of nature have been so disregarded, that a mother has been known to devour her offspring. Stupor and coma close the terrible scene. The duration of life under such circumstances varies in

different individuals, being usually short in proportion to the youth and robustness of the frame ; and thus, as Dr. Paris observes, Dante was true to nature when, in picturing the fate of Count Ugolino and his sons, he represents the unhappy parent as surviving his children for some days. Women, too, are thus able to support abstinence longer than men ; most of the reported cases of long abstinence have occurred in women. Terrible as is this description of death, it has been sometimes encountered for the purposes of suicide. In the "Transactions of the Acad. Roy. de Med.," cases are recorded of persons thus persisting for an immense period, until their object was accomplished. But perhaps the most determined case on record is that of Viterbi, a Corsican, who, condemned to die for a murder of which he declared himself innocent, resolved thus to terminate his existence. Although, during the first few days, he suffered the greatest torment from hunger, he resisted the meats, &c. which were offered him, and continued calmly to await and record in a journal his approaching end. This was delayed, in some measure, by his yielding, on one or two occasions, to the tormenting thirst which assailed him (a constant symptom in those suffering from starvation), and drinking a little wine. He lingered on, possessed of his mental faculties until the twenty-first day, when he expired.

The ancient physicians held the highest opinion of the powers of abstinence in producing longevity and in curing disease, an opinion in which many moderns have coincided ; the longevity of the early Christians, who retired from persecution into the deserts of Arabia, and of the primitive saints and hermits, who lived with such frugality, has been often cited. On the other hand, many consider that however desirable during the existence of acute disease, abstinence too rigid in its observance or too long in its duration may be productive of much mischief when the body is in health. One of the strongest advocates of abstinence, or rather of temperance in living, speaking, as he did, with all the force derived from practical experience, was the Venetian nobleman Louis Cornaro, who lived in the sixteenth century. By his voluptuous course of life, he had brought himself to such a state that, at the age of forty, his physicians announced to him that without a thorough change in his mode of living his days would indeed be short. With a determination which nothing could shake, he at once commenced the abridgment of his daily food, until he had reduced it to a most insignificant quantity. In proportion as he did this, he found his health, strength, and spirits improve, and lived in the full enjoyment of every faculty to the advanced age of a century. Convinced of the immense benefit he had derived from his regimen, he composed three or four little treatises upon the subject, in which he warmly recommends its adoption : he writes sensibly, contending only for the principle of abstemiousness, and not for the exact mode and degree which he himself had employed. In his later publications he rejoices in the benefit his advice had conferred upon many. Not only did he find his bodily health improve, but also the disposition of his

mind. When at the age of seventy-eight, urged by his friends and physicians, he increased his food to twelve or fourteen ounces per diem, but soon perceived the ill effects upon his health and temper, which were at once removed by recurring to his spare diet. Writing at this period, he reprobates the opinion that old age is little better than death, and shows how actively he passes the day in the pursuit of the arts, and in laboring to inform his fellow-citizens upon various points relating to their interests. He congratulates himself upon the serenity of mind he had arrived at, which elevated him above all grovelling contemplations. His cheerfulness was constant : "Then how gay, pleasant, and good-humored I am," he writes ; and again, "At my present age of eighty-three, I have been able to write a very entertaining comedy, abounding with innocent mirth and pleasant jests." The late Mr. Abernethy was a great admirer of Cornaro, and, we believe, reprinted his little work. Dr. Miller, of New York, observes that an exemption from pestilential diseases by reason of abstemiousness becomes sometimes national. Thus the French and Spaniards in the West Indies and other warm climates are observed, by their abstemiousness from spirituous liquors and their retention of a spare diet, to escape dangers to which the British, more plethoric in their habits of body, and less careful in their mode of living, have frequently fallen victims in great numbers.

In persons rescued from impending starvation, the greatest care is required in administering food. Many lives, which might have been saved, have been lost by rashness in this respect. All solid food must at first be avoided, and especially milk, which, solidifying in the stomach, is of difficult and slow digestion. A little thickened broth only should be given every few hours. Mr. Hunter found by experiment that animals enfeebled by abstinence maintain their temperature with difficulty, and thus the cautious application of heat and gentle friction should not be neglected.

CONTEMPORANEOUS APPLAUSE.—Great minds had rather deserve contemporaneous applause, without obtaining it, than obtain, without deserving it ; if it follow them, it is well, but they will not deviate to follow it. Milton neither aspired to present fame, nor even expected it ; but (to use his own words) his high ambition was "to leave something so written to after ages, that they should not willingly let it die." And Cato finely observed, he would much rather that posterity should inquire why no statues were erected to him, than why they were.

DUPES TO OURSELVES.—We are all greater dupes to our own weakness than to the skill of others ; and the successes gained over us by the designing are usually nothing more than the prey taken from those very snares we have laid ourselves. One man falls by his ambition, another by his perfidy, a third by his avarice, and a fourth by his lust : what are these but so many nets, watched indeed by the fowler, but woven by the victim ?

NATURAL HISTORY.



Jackals.

THE JACKAL, OR TSCHAKKAL.

THIS animal is of a yellowish-gray color above, whitish below, thighs and legs yellow, ears ruddy, muzzle very pointed, tail reaching hardly to the heel (properly so called). The colors sometimes vary, and the back and sides are described by Mr. Bennett as of mixed gray and black, and as abruptly and strikingly distinguished from the deep and uniform tawny of the shoulders, haunches, and legs. The head nearly of the same mixed shade with the upper surface of the body. It inhabits India and other parts of Asia and Africa. Cuvier says that jackals are met with from India and the environs of the Caspian Sea to Guinea, but that it is not certain that they are all of the same species. Their habits gregarious, hunting in packs, and the pests of the countries where they are found, and where they burrow in the earth. In their huntings the jackals will frequently attack the larger quadrupeds, but the smaller animals and poultry are their most frequent prey. Their cry is very peculiar and piercing. Captain Beechey notices it as having something rather appalling when heard for the first time at night; and he remarks, that as they usually come in packs, the first shriek which is uttered is always the signal for a general chorus. "We hardly know," continues the Captain, "a sound which partakes less of harmony than that which is at present in question; and indeed the sudden burst of the answering long-protracted scream, succeeding immediately to the opening note, is scarcely less impressive than the roll of the thunder-clap immediately after a flash of lightning. The effect of this music is very much increased when the first note is heard in the distance (a circumstance which often occurs), and the answering yell bursts out from several points at once, within a few

yards or feet of the place where the auditors are sleeping."

The jackal is frequently alluded to in the sacred writings. "The Hebrew word *shual*, rendered 'fox' in the old Testament, is now generally agreed to be, in most cases, the jackal (*canis amens*). This animal is well enough depicted as something between the wolf and the fox, whence some naturalists are disposed to describe it as 'the wolf-fox.' It is about the size of the former animal. The upper part of the body is of a dirty yellow; a darker mark runs upon the back and sides; and the under parts are white. The jackals associate together like the wolves, and form large packs, sometimes, in Palestine, of about two or three hundred; differing in this respect from the fox, which is not gregarious. In such packs, they prowl at night in search of prey, which chiefly consists of carrion, to obtain which they approach to the towns and villages, and sometimes enter and prowl about the streets when they can gain admittance. In some towns, large numbers remain concealed during the day, in holes and corners, which they leave at night to scour the streets in search of food. It is often necessary to secure the graves of the recently dead with great care, to prevent the corpse from being disinterred and devoured by these animals. The howlings of these packs of jackals are frightful, and give great alarm to travellers; hence they are also called in Hebrew *ayim*, 'howlers.' They do not molest man, unless when they can do so with great advantage, as when he lies asleep, or disabled by wounds or sickness. The jackals, like the foxes, live in holes which they form in the ground: they are particularly fond of establishing themselves in ruined towns, not only because they there find numerous secure retreats, ready made, or completed

with ease, but because the same facilities attract to such places other animals, on some of which they prey. From this circumstance, the prophets, in describing the future desolation of a city, say it shall become the habitation of jackals; a prediction verified by the actual condition of the towns to which their prophecies apply. But the common fox is also of frequent occurrence in Palestine; and it appears that the Hebrews included both it and the jackal under the name of *shual*, although the latter was sometimes specially distinguished as the *ayim*. It must therefore, in most cases, be left to the bearing of the context to determine when the jackal and the fox are respectively denoted, by the name (*shual*) common to both."



Talegalla Lathamii. (Gould.)

THE TALEGALLA.

THE Talegalla are a species of Australian birds of the genus *Megapodiinae*, of which little has been correctly known till within a recent period. They had been considered as related to the family of vultures. Indeed, Swainson has said:—"In fact, the feet of the two birds are formed nearly on the same principle; but, then, so are those of *Orthonyx*, a little scansorial bird not much bigger than a robin. All three genera (of the *Megapodiinae*), in short, are remarkable for their large disproportionable feet, long and slightly-curved claws, and the equality of length, or nearly so, of the outer and the middle toe. It is by instances such as these that we perceive the full extent of those unnatural combinations which result from founding our notions of classifications from one set of characters, and forgetting to look at the full consequences of carrying those notions into extended operation. Nor is this the only peculiarity of the New Holland vulture; for, unlike all others of its family, it possesses eighteen feathers in its tail. An examination of the bill," Mr. Swainson gives a cut of it, "which is decidedly raptorial, joined with many other considerations, shows that all these are but analogical relations to the *Rasores*, while the real affinities of the bird are in the circle of the *Vulturidae*, of which it forms the rasorial type."

Mr. Gould, to whom we are indebted for a full and satisfactory account of the habits of this extraordinary bird, to which we shall presently advert, modestly says: "After all the facts that have been stated, I trust it will be evident that its natural situation is among the *Rasores*, and that it forms one of a great family of birds peculiar to Australia and the Indian Islands, of which *Megapodius* forms a part; and in confirmation of this view, I may add that the sternum has the two deep emarginations so truly characteristic of the *Gallinaceae*; at all events, it is in no way allied to the *Vulturidae*, and is nearly as far removed from *Menura*." It seems to us that the *Talegalla Lathamii* may be considered, in a degree, as the representative of the turkey in Australia.

The adult male has the whole of the upper surface, wings, and tail, of a blackish-brown; the feathers of the under surface blackish-brown at the base, becoming silvery-gray at the tip; skin of the head and neck deep pink-red, thinly sprinkled with short hair-like blackish-brown feathers; wattle bright yellow, tinged with red where it unites with the red of the neck; bill black; irides and feet brown.

The female is about a fourth less than the male in size, but so closely the same in color as to render a separate description unnecessary. She also possesses the wattle, but not to so great an extent.

Size about that of a turkey.

Mr. Gould describes *Talegalla Lathamii*, or the *Wattled Talegalla*, as a gregarious bird, generally moving about in small companies, much after the manner of the *Gallinaceae*, and, like some species of that tribe, as very shy and distrustful. When it is disturbed, he states that it readily eludes pursuit by the facility with which it runs through the tangled brush. If hard pressed, or where rushed upon by their great enemy, the native dog, the whole company spring upon the lowermost bough of some neighboring tree, and, by a succession of leaps from branch to branch, ascend to the top, and either perch there or fly off to another part of the brush. They resort also to the branches of trees as a shelter from the sun in the middle of the day, a habit which Mr. Gould notices as greatly tending to their destruction; for the sportsman is enabled to take a sure aim, and the birds, like the ruffed grouse of America, will allow a succession of shots to be fired till they are all brought down.

But the most remarkable circumstance connected with the economy of this bird is its nidification, for it does not hatch its eggs by incubation. It collects together a great heap of decaying vegetables as the place of deposit of its eggs, thus making a hot-bed, arising from the decomposition of the collected matter, by the heat of which the young are hatched. Mr. Gould describes this heap as the result of several weeks' collection by the birds previous to the period of laying, as varying in quantity from two to four cart-loads, and as of a perfectly pyramidal form. This mound, he states, is not the work of a single pair of birds, but is the result of the united labor of many: the same site appeared to Mr. Gould to be resorted to for several years in succession, from the great size and entire decomposition of the lower

part, the birds adding a fresh supply of materials on each occasion previous to laying.

"The mode," says Mr. Gould in continuation, "in which the materials composing these mounds are accumulated is equally singular, the bird never using its bill, but always grasping a quantity in its foot, throwing it backwards to one common centre, and thus clearing the surface of the ground, for a considerable distance, so completely that scarcely a leaf or a blade of grass is left. The heap being accumulated, and time allowed for a sufficient heat to be engendered, the eggs are deposited, not side by side, as is ordinarily the case, but planted at the distance of nine or twelve inches from each other, and buried at nearly an arm's depth, perfectly upright, with the large end upwards; they are covered up as they are laid, and allowed to remain until hatched. I have been credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain nearly a bushel of eggs at one time from a single heap; and as they are delicious eating, they are eagerly sought after. Some of the natives state that the females are constantly in the neighborhood of the heap about the time the young are likely to be hatched, and frequently uncover and cover them up again, apparently for the purpose of assisting those that may have appeared; while others have informed me that the eggs are merely deposited, and the young allowed to force their way unassisted. In all probability, as nature has adopted this mode of reproduction, she has also furnished the tender birds with the power of sustaining themselves from the earliest period; and the great size of the egg would equally lead to this conclusion, since in so large a space it is reasonable to suppose that the bird would be much more developed than is usually found in eggs of smaller dimensions. In further confirmation of this point, I may add, that in searching for eggs in one of the mounds, I discovered the remains of a young bird, apparently just excluded from the shell, and which was clothed with feathers, not with down, as is usually the case. It is to be hoped that those who are resident in Australia, in situations favorable for investigating the subject, will direct their attention to the further elucidation of these interesting points. The upright position of the eggs tends to strengthen the opinion that they are never disturbed after being deposited, as it is well known that the eggs of birds which are placed horizontally are frequently turned during incubation. Although, unfortunately, I was almost too late for the breeding-season, I nevertheless saw several of the heaps, both in the interior and at Illawarra: in every instance they were placed in the most retired and shady glens, and on the slope of a hill, the part above the nest being scratched clean, while all below remained untouched, as if the birds had found it more easy to convey the materials down than to throw them up. In one instance only was I fortunate enough to find a perfect egg, although the shells of many from which the young had been excluded were placed in the manner I have described. At Illawarra they were rather deposited in the light vegetable mould than among the leaves, which formed

a considerable heap above them. The eggs are perfectly white, of a long, oval form, three inches and three-quarters long by two inches and a half in diameter."

The same author relates that these birds, while stalking about the wood, frequently utter a loud clucking noise; and, in various parts of the bush, he observed depressions in the earth, which the natives informed him were made by the birds in dusting themselves. The stomach is stated by Mr. Gould to be extremely muscular; and he found the crop of one which he dissected filled with seeds, berries, and a few insects.

Mr. Gould states that the extent of the range of this species over Australia is not yet satisfactorily ascertained. It is known, he says, to inhabit various parts of New South Wales, from Cape Howe on the south to Moreton Bay on the north; but the cedar-cutters and others, who so frequently hunt through the brushes of Illawarra and Maitland, have nearly extirpated it from those localities, and it is now most plentiful in the dense and little-trodden brushes of the Manning and Clarence. Mr. Gould was at first led to believe that the country between the mountain-ranges and the coast constituted its sole habitation; but he was agreeably surprised to find it inhabiting the scrubby gullies and sides of the lower hills that branch off from the great range into the interior. He procured specimens on the Brezi range to the north of Liverpool Plains, and ascertained that it was abundant in all the hills on either side of the Namoi.

In the *Leipoa* the bill is nearly as long as the head, slender, tumescent at the base, the edges undulated and incurved at the base, the nostrils ample,



Leipoa Ocellata. (Gould.)

oblong, covered with an operculum, and placed in a central hollow. Head subcrested. Wings ample, rounded, concave; fifth primary quill the longest; the tertiaries nearly as long as the primaries. Tail rounded, tail-feathers fourteen. Tarsi moderate, robust, covered with scuta anteriorly, and posteriorly with scales which are rounded and unequal. Toes rather short; lateral toes nearly equal. (Gould.) Head and crest blackish-brown; neck and shoulders dark ash-gray; the forepart of the neck from the

chin to the breast marked by a series of lanceolate feathers, which are black with a white stripe down the centre; back and wings conspicuously marked with three distinct bands of grayish-white, brown, and black, near the tip of each feather, the marks assuming an ocellated form, particularly on the tips of the secondaries; primaries brown, their outer webs marked with two or three zigzag lines near their tip; all the under surface light buff, the tips of the flank feathers barred with black; tail blackish-brown, broadly tipped with buff; bill black; feet blackish-brown.

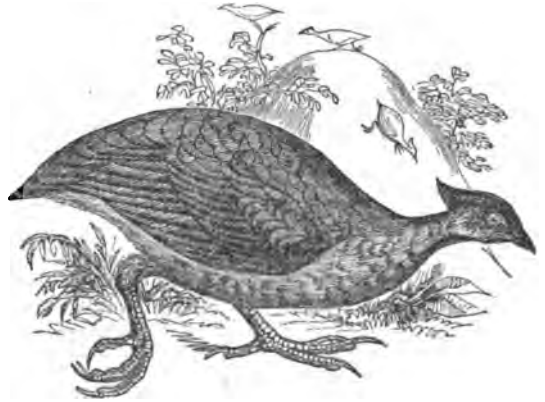
In size, this beautiful bird is inferior to *Talegalla Lathamii*, and it is more slender and more elegantly formed.

Mr. Gould, in his "Birds of Australia," gives an account collected by Mr. John Gilbert, from G. Moore, Esq., advocate-general, Mr. Armstrong, the aboriginal interpreter, and some of the more intelligent natives of Western Australia. The *Ocellated Leipoa* is there described as a ground-bird, never taking to a tree except when closely hunted: when hard pursued it will frequently run its head into a bush, and is then easily taken. Food generally consisting of seeds and berries. The note mournful, very like that of a pigeon, but with a more inward tone. Eggs deposited in a mound of sand, the formation of which is the work of both sexes. According to the natives, the birds scratch up the sand for many yards around, forming a mound about three feet in height, the inside of which is constructed of alternate layers of dried leaves, grasses, &c., among which twelve eggs and upwards are deposited, and are covered up by the birds as they are laid; or, as the natives express it, "the countenances of the eggs are never visible." Upon these eggs the bird never sits; but when she has laid out her lay, as the henwives say, the whole are covered up, when the mound of sand resembles an ant's nest. The eggs, which are white, very slightly tinged with red, and about the size of a common fowl's egg, are hatched by the heat of the sun's rays, the vegetable lining retaining sufficient warmth during the night: they are deposited in layers, no two eggs being suffered to lie without a division. The natives, who are very fond of the eggs, rob the hillocks two or three times in a season; and they judge of the number of eggs in a mound by the quantity of feathers lying about. If the feathers be abundant, the hillock is full; and then they immediately open and take the whole. The bird will then begin to lay again, again to be robbed, and will frequently lay a third time. Upon questioning one of the men attached to Mr. Moore's expedition, he gave to Mr. Gilbert a similar account of its habits and mode of incubating; adding, that in all the mounds they opened they found ants almost as numerous as in an ant-hill; and that, in many instances, that part of the mound surrounding the lower portion of the eggs had become so hard, that they were obliged to chip round them with a chisel to get the eggs out: the insides of the mounds were always hot.

Captain Grey, of the 83d regiment, who had just returned from his expedition to the north-west coast,

informed Mr. Gould that he had never fallen in with the nests but in one description of country, viz., where the soil was dry and sandy, and so thickly wooded with a species of dwarf *Leptospermum*, that if the traveller strays from the native paths, it is almost impossible for him to force his way through. In these close scrubby woods, small open glades occasionally occur, and there the Ngow-oo constructs its nest—a large heap of sand, dead grass, and boughs, at least nine feet in diameter and three feet in height; Captain Grey had seen them even larger than this. Upon one occasion only he saw eggs in these nests: they were placed some distance from each other, and buried in the earth. Captain Grey states that he is not sure of the number, but the account given by the natives led him to believe that, at times, large numbers were found.

This bird is found in Western Australia. Mr. Moore saw a great many of them about sixty miles north of Perth; but its most favorite country appears to be the barren sandy plains of the interior, one hundred miles north and east of York. The farthest point north at which Captain Grey saw the breeding-places was Gantheaume Bay. Captain Grey states that the natives of King George's Sound say that the same or a nearly allied species exists in that neighborhood.



Megapodius Tumulus, Mound-raising Megapode, with nest in the distance. (Gould.)

In the *Megapodius Tumulata*, the head and crest are of a very deep cinnamon-brown; back of the neck and all the under surface very dark gray; back and wings cinnamon-brown; upper and under tail-coverts dark chestnut-brown; tail blackish-brown; irides generally dark brown, but in some specimens light reddish-brown; bill reddish-brown, with yellow edges; tarsi and feet bright orange, the scales on the front of the tarsi from the fourth downwards, and the scales of the toes, dark reddish-brown.

Size about that of a common fowl.

This is the *Ooregoorga* of the aborigines of the Cobourg Peninsula; the *Jungle-fowl* of the colonists of Port Essington.

On Mr. Gilbert's arrival at Port Essington, his attention was attracted to numerous great mounds of earth which were pointed out to him by some of the residents as being the tumuli of the aborigines. The

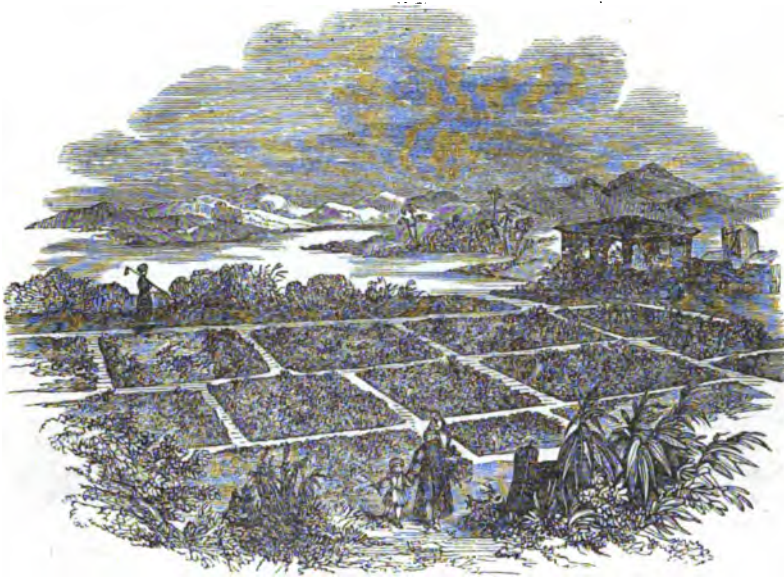
natives, on the other hand, assured him they were formed by the Jungle-fowl for the purpose of hatching its eggs. But this last statement appeared so extraordinary, and so much at variance with the general habits of birds, that no one in the settlement believed them, and the great size of the eggs brought in by them as the produce of this bird strengthened the doubt of the veracity of their information. Mr. Gilbert, however, knowing the habits of *Leipoa*, took with him an intelligent native, and proceeded about the middle of November to Knocker's Bay, a part of Port Essington harbor comparatively but little known, and where he had been informed a number of these birds were to be seen. He landed beside a thicket, and had not advanced far from the shore when he came to a mound of sand and shells, with a slight mixture of black soil, the base resting on a sandy beach, only a few feet above high-water mark: it was enveloped in the large yellow-blossomed *Hibiscus*, was of a conical form, twenty feet in circumference at the base, and about five feet high. On asking the native what it was, he replied, "Ore-goorgā Rambal" (Jungle-fowl's house or nest.) Mr. Gilbert scrambled up the sides of it, and found a young bird in a hole about two feet deep; the nestling, apparently only a few days old, was lying on a few dry withered leaves. The native assured Mr. Gilbert that it would be of no use to look for eggs, as there were no traces of the old birds having lately been there. Mr. Gilbert took the utmost care of the young bird, placed it in a moderate-sized box, into which he introduced a large portion of sand, and fed it on bruised Indian corn, which it took rather freely. Its disposition was wild and intractable, and it effected its escape on the third day. While it remained in captivity, it was incessantly employed in scratching up the sand into heaps, and Mr. Gilbert remarks that the rapidity with which it threw the sand from one end of the box to the other was quite surprising for so young and small a bird, its size not being larger than that of a small quail. At night it was so restless that Mr. Gilbert was constantly kept awake by the noise it made in endeavoring to escape. In scratching up the sand, the bird only employed one foot, and having grasped a handful as it were, threw the sand behind it with but little apparent exertion, and without shifting its standing position on the other leg. This habit, Mr. Gilbert observes, seemed to be the result of an innate restless disposition and a desire to use its powerful feet, and to have but little connexion with its feeding; for, although Indian corn was mixed with the sand, Mr. Gilbert never detected the bird in picking any of it up while thus employed.

Mr. Gilbert continued to receive the eggs without any opportunity of seeing them taken from the ground until the beginning of February, when, on again visiting Knocker's Bay, he saw two taken from a depth of six feet, in one of the largest mounds he had met with. In this instance the holes ran down in an oblique direction from the centre towards the outer slope of the hillock; so that although the eggs were six feet deep from the summit, they were only two or three feet from the side.

How the young effect their escape does not appear; some natives told Mr. Gilbert that the nestlings effected their escape unaided; but others said that the old birds at the proper time scratched down and released them. The natives say that only a single pair of birds are ever found at a mound at a time. Our space will not permit a more detailed account of these highly curious mounds; we can only spare room for Mr. Gilbert's description of the general habits of this interesting species:

"The Jungle-fowl is almost exclusively confined to the dense thickets immediately adjacent to the sea-beach: it appears never to go far inland, except along the banks of creeks. It is always met with in pairs or quite solitary, and feeds on the ground, its food consisting of roots which its powerful claws enable it to scratch up with the utmost facility, and also of seeds, berries, and insects, particularly the larger species of Coleoptera. It is at all times a very difficult bird to procure; for, although the rustling noise produced by its stiff pinions when flying away be frequently heard, the bird itself is seldom to be seen. Its flight is heavy and unsustained in the extreme; when first disturbed, it invariably flies to a tree, and on alighting stretches out its head and neck in a straight line with its body, remaining in this position as stationary and motionless as the branch upon which it is perched: if, however, it becomes fairly alarmed, it takes a horizontal but laborious flight for about a hundred yards, with its legs hanging down as if broken. I did not myself detect any note or cry, but, from the natives' description and imitation of it, it much resembles the clucking of the domestic fowl, ending with a scream like that of the peacock. I observed that the birds continued to lay from the latter part of August to March, when I left that part of the country; and, according to the testimony of the natives, there is only an interval of about four or five months, the driest and hottest part of the year, between their seasons of incubation. The composition of the mound appears to influence the coloring of a thin epidermis with which the eggs are covered, and which readily chips off, showing the true shell to be white; those deposited in the black soil are always of a dark reddish-brown; while those from the sandy hillocks near the beach are of a dirty yellowish-white: they differ a good deal in size, but in form they all assimilate, both ends being equal; they are three inches and five lines long by two inches and three lines broad."

London Mechanics.—London employs 15,503 shoemakers, 14,502 tailors, 2391 blacksmiths, 2013 whitesmiths, 5032 house-painters, 1075 fish-dealers, 2662 hatters and hosiers, 19,208 carpenters, 6822 bricklayers, &c., 5416 cabinet-makers, 1005 wheelwrights, 2108 sawyers, 2897 jewellers, 1172 old clothesmen, (chiefly Jews,) 3628 compositors, 700 pressmen, 1392 stationers, 2633 watch and clock makers, 4227 grocers, 1430 milkmen, 5655 bakers, 2091 barbers, 1040 brokers, 4322 butchers, 1568 cheesemongers, 1082 chemists, 5199 clothiers and linen drapers, 2167 coach makers, 1367 coal merchants, 2133 coopers, 1381 dyers, 2319 plumbers, 907 pastry-cooks, 869 saddlers, 1249 tinmen, 803 tobacconists, 1470 turners, 556 undertakers. The above are all adult males.



An Eastern Garden.

THE FERTILITY OF CANAAN.

THE promise God gave by Moses to the people of Israel was, "The Lord thy God bringeth thee into a good land; a land of brooks of water, of fountains and depths, that spring out of valleys and hills; a land of wheat, and barley, and vines, and fig-trees, and pomegranates, a land of oil olive and honey." Paxton observes:—"If to the natural fertility of this highly favored country be added, the manner in which it was divided among the tribes of Israel, it will furnish an easy and satisfactory answer to the question which the infidel has often put: 'How could so small a country as Canaan maintain so immense a population as we find in the writings of the Old Testament?' That rich and fertile region was divided into small inheritances, on which the respective proprietors lived and reared their families. Necessity, not less than a spirit of industry, required that no part of the surface capable of cultivation should be suffered to lie waste. The husbandman carried his improvements up the sides of the steepest and most rugged mountains, to the very top; he converted every patch of earth into a vineyard, or olive plantation; he covered the bare rocks with soil, and thus turned them into fruitful fields; where the steep was too great to admit of an inclined plane, he cut away the face of the precipice, and built walls around the mountain to support the earth, and planted his terraces with the vine and the olive. These circles of excellent soil were seen rising gradually from the bottom to the top of the mountains, where the vine and the olive, shading the intermediate rocks with the liveliest verdure, and bending under the load of their valuable produce, amply rewarded the toils of the cultivator. The remains of those hanging gardens, those terrace plantations, after the lapse of so many centuries, the revolutions of empires, and the long decline of industry

among the miserable slaves that now occupy that once highly favored land, may still be distinctly seen on the hills and mountains of Judea."

But the extraordinary fruitfulness of Canaan, and the number of its inhabitants during the prosperous times of the Jewish commonwealth, may be traced to another and still more powerful cause than any that has been mentioned,—the special blessing of Heaven, which that favored people for many ages exclusively enjoyed. We know from the testimony of Moses, that the tribes of Israel reposed under the immediate care of Jehovah, their covenanted God and King, enjoyed his peculiar favor, and were multiplied and sustained by a special compact, in which the rest of the nations had no share: "The Lord shall make thee plenteous in goods, in the fruit of thy body, and in the fruit of thy cattle, and in the fruit of thy ground, in the land which the Lord sware unto thy fathers to give it." And the blessing of Jehovah converts the desert into a fruitful field: for thus it is promised (and what God promises he is able also to perform): "The wilderness and the solitary place shall be glad for them, and the desert shall rejoice and blossom as the rose; it shall blossom abundantly, and rejoice even with joy and singing; the glory of Lebanon shall be given unto it, the excellency of Carmel and Sharon; they shall see the glory of the Lord, and the excellency of our God; for in the wilderness shall waters break out, and streams in the desert, and the parched land shall become a pool, and the thirsty land springs of water: in the habitations of dragons, where each lay, shall be grass, with reeds and rushes." In this passage, the blessings of salvation, as exhibited in the present dispensation of grace, are certainly intended; but the use of these figures would be quite improper, if the special favor of God could produce no such important changes on the face of nature.

As to its natural fertility, Dr. Shaw says: "When



Harvest in Palestine, Cana.

he travelled in Syria and Phenicia, in December and January, the whole country looked verdant and cheerful: and the woods particularly, which are chiefly planted with the gall-bearing oak, were everywhere bestrewed with a variety of anemonies, ranunculuses, colchicas, and mandrakes. Several pieces of ground near Tripoli were full of liquorice; and at the mouth of a famous grotto he saw an elegant species of the blue lily, the same with Morrison's *lilium Persicum florens*. In the beginning of March, the plains, particularly between Jaffa and Rama, were everywhere planted with a beautiful variety of fritailaris, tulips of innumerable hues, and a profusion of the rarest and most beautiful flowers; while the hills and the mountains were covered with yellow polium, and some varieties of thyme, sage, and rosemary."

Even Volney observes, that the present sterile condition of Syria is "less owing to its physical than to its political state."

THE PRESENT STATE OF THE SAMARITANS.

THE Samaritans are now reduced to a very small community, there being only thirty men who pay taxes, and few, if any, who are exempt; so that their whole number cannot be reckoned at over one hundred and fifty souls. One of them is in affluent circumstances; and having been for a long time chief secretary of the Mutesellim of Nablus, became one of the most important and powerful men of the province. He had recently been superseded in his influence with the governor by a Copt, and now held only the second place. He was called El-'Abdes Samary. The rest of the Samaritans are not remarkable either for their wealth or poverty. The physiognomy of those we saw was not Jewish:

nor, indeed, did we remark in it any particular character as distinguished from that of other natives of the country. They keep the Saturday as their Sabbath with great strictness, allowing no labor nor trading, nor even cooking or lighting a fire, but resting from their employments the whole day. On Friday evening they pray in their houses; and on Saturday have public prayers in their synagogue at morning, noon, and evening. They meet also in the synagogue on the great festivals, and on the new moons; but not every day. The law is read in public, not every Sabbath day, but only upon some festivals. Four times a year they go up to Mount Gerizim (Jebel et Tur) in solemn procession to worship; and then they begin reading the law as they set off, and finish it above. These seasons are, the feast of the Passover, when they pitch their tent upon the mountain all night, and sacrifice seven lambs at sunset; the day of Pentecost; the feast of Tabernacles, when they sojourn here in booths built of branches of the arbutus; and lastly, the great day of Atonement in autumn. They still maintain their ancient hatred against the Jews; accuse them of departing from the law in not sacrificing the Passover, and in various other points, as well as of corrupting the ancient text, and scrupulously avoid all connexion with them. If of old "the Jews had no dealings with the Samaritans," the latter at the present day reciprocate the feeling, and neither eat nor drink, marry, nor associate with the Jews, but only trade with them.

AN acre is forty-eight hundred and forty square yards, or sixty-nine yards, one foot, eight and a half inches each way. A square mile, seventeen hundred and sixty yards each way, contains six hundred and forty acres.

BIOGRAPHIC SKETCH
OF
PATRICK HENRY, THE ORATOR.

SECOND only to Washington in the estimation of the American people, at the era of their Revolution, stood Patrick Henry, usually called the Orator of Virginia. In Hanover County, in that colony, he first saw the light on the 29th of May, 1736. His father kept a grammar-school of the humbler order; and in this seminary did young Henry acquire the rudiments of Latin, which, with a slight tincture of mathematics, formed the extent of his regular education. In his boyhood he is said to have shown a strong aversion to study, preferring greatly to indulge in the sports of the forest, the hill, and the lake, and almost always following such pursuits alone. But it was also observed of him, by the more sharp-sighted, that the quickness of his perceptions, and strength of his memory, made up in a great measure for the want of the power of close application; and that no remark of any importance could be made in his presence without being retained in his mind, heedless as he might at the time seem to be. On the whole, however, he was regarded by most people as an indolent and unpromising boy; and, his love of solitude having induced careless habits as to dress and demeanor, no external qualities appeared in him to redeem his other deficiencies.

As he was one of a family of nine children, his parents were glad to get him placed behind the counter of a small store in a country village. Thence he emerged at a very early age, and prematurely commenced business for himself. The speculation was entered on almost without capital, and soon proved unfortunate, partly, it is related, because, in place of studying the wishes of his customers, Henry took into his head the fancy of studying their characters. The knowledge which he thus acquired of human nature might enable him in after days to wield at will the democracy, but it was ill calculated to improve his temporary fortunes. These were rendered still less promising by his falling in love with a Miss Shelton, and marrying her, at the age of eighteen, she being as poorly provided with funds as himself. Nevertheless, on the failure of the mercantile concern, the friends of the young pair raised a sufficiency of money to place them in a small farm, with two negroes as helps. It is admitted that Henry toiled here in a manner deserving of success; but he was ignorant of farming affairs, and was weighed down by previous debts. Two years passed away, and found him again a ruined man; nor was a second mercantile attempt one whit more successful than the former.

Burdened with a family, overwhelmed by pecuniary engagements, and set down by all as a man doomed to misfortune, Patrick Henry, now twenty-four years of age, might almost have been pardoned for sinking into despondency. But this was not in his nature. Though others, strangely enough, seem not as yet to have descried in him the marks of a powerful intellect, he himself certainly felt the sustaining consciousness that he did possess powers, for

the development of which opportunity alone was required. The direction in which he turned his thoughts at this critical period sufficiently shows that he even had a glimmering internal sense of what was his greatest gift. He resolved to become a candidate for the bar. After six weeks' preparation he presented himself before the three examiners, whose signatures were preliminary to a call, and two of them signed for him, apparently out of mere good nature. But the third, Mr. John Randolph, a polished man of the old school, revolted so much at the rough and uncouth appearance of the candidate, that he refused even to examine him. But at length, induced to do so, he received a very great surprise indeed. On a mooted point of law, Henry, guided by the force, simply, of natural reason, not only astonished the examiner by the acuteness of his views and the splendor of his illustrations, but even caught the great lawyer tripping, as a reference to authorities proved. Randolph confessed his error, and generously predicted a career of fame and honor for Henry, if his industry proved equal to his genius.

Notwithstanding this encouraging prognostication, three years of penury were yet in store for the patronless Henry; and during this interval he was reduced to live with his father-in-law, in whose small hotel he was not unfrequently necessitated to fulfil a waiter's duties. But from this humiliating position he wanted only the aid of occasion to extricate him, and, almost accidentally, the occasion at length was granted to him. The Virginian clergy and their parishioners had a quarrel, which ultimately resolved itself into a question of damages. The clergy, much better supported than their opponents, seemed to be certain of casting the people in heavy costs. The advocate for the people became disheartened, and threw up the case; and Patrick Henry, almost as a last resource, was engaged in his stead. The day of his first appearance was every way a trying one. On the bench of the court sat not only the judges, but a large body of clergymen, the most learned men of the province; and the house itself was crowded by an eager multitude. As if to try the young advocate even more, his own father was present in an official capacity. After a clear and able address for the clergy, Patrick Henry rose. Well, at that moment, might he have felt in imagination, the hands of his little children tugging at his coat, as Lord Erskine says he did on a similar occasion. The appearance of Henry was not calculated to prepossess his hearers in his favor, nor did such an effect result from his opening sentences. On the contrary, they fell so flatly from his lips, that the clergy began to nod and leer at each other, and the speaker's father hung down his head. But the scene soon changed. "As Henry warmed (to use the language of one of his biographers), he seemed to shed his nature—the rustic shell fell from him—his person seemed to undergo a mystical transformation—his mien became majestic—his eye flashed fire—the tones of his voice fell directly upon the heart—and he stood before his mute and vassal auditory, a creature of inspiration. The effect was incredible. Appalled by the fury of one of his terrible invective

tives, the clergy fled affrighted from the bench ; and the jury, obedient to his bidding, returned a verdict of one penny damages." This memorable speech gave a proverbial phrase to Virginia, where a specially good speaker is still talked of as "being almost equal to Patrick Henry when he pleaded against the parsons."

Few orators, indeed, from Demosthenes down to our greatest moderns, have blazed forth in the perfection of their powers on their first trial. But Henry was the orator of nature, and to him art and practice were unnecessary. During his whole life, natural sense and genius, not acquired knowledge, guided him. After his opening display, he removed to Louisa county, and, carrying his reputation with him, received a large share of the somewhat meager practice of these courts. His professional exertions of this era can only be spoken of generally, but, by all accounts, they were surprisingly brilliant. The verdicts of juries and the applause of judges testify to this fact. But the time came when Patrick Henry was to step into a mightier arena, and employ his energies on a cause of almost unparalleled magnitude and importance. Immediately after the obnoxious Stamp Act of 1764—65 had spread a ferment among the American colonies, Henry, at that time almost adored by the people, among whom he was ever proud to rank himself, was elected a member of the Legislature of Virginia. During the whole of the ensuing short sitting, Henry seems to have waited in the expectation that the deepening murmurs of the people would find condensed expression by some voice more authoritative than his own ; but the boldest were content to sit in gloomy silence. At length, "alone, unadvised, and unassisted," as he himself tells us, Henry determined to step forth ; and he proposed, in May, 1765, his famous Five Resolutions, one of which asserted the sole right of the colony to tax itself, being a virtual declaration of independence. The torrent of eloquence which Henry poured forth in support of these resolutions bore down all opposition, and they were carried by a majority of *one*. We have but one sentence left to show us what the speech of Henry was. It is a sentence equally marked by power and self-possession. In the midst of his invective he exclaimed, "Cæsar had his Brutus—Charles the First his Cromwell—and George the Third" ("Treason !" cried the speaker, and "Treason !" was re-echoed on all sides)—"Yes," continued Henry, never faltering for a moment, and fixing an eye of fire on the speaker, "and George the Third—*may profit by their example*. If this be treason, make the most of it."

The resolutions of Henry involved, as has been said, the principle of independence ; but the critical struggle did not immediately follow. It was only brought on by the tea affair at Boston in 1774. The subject of our memoir was then startled anew by the armies which Britain was silently collecting in the Canadas. He thundered forth to the Virginian legislature a speech which rang through the whole colonies like the summons of a new Demosthenes—"Let us march against Philip ; let us conquer or die !" He called for an armed organization, and, pointing to

the British forces in the north, he demanded what enemies Great Britain had in America to require and employ these. "She has none," he himself replied. "They are meant for us ; they can be meant for no other. They are sent over to bind and rivet upon us those chains which the British ministry have so long been forging. And what have we to oppose to them ? Shall we try argument ? Sir, we have been trying that for the last ten years. We have done every thing which could be done to avert the storm which is coming on. We have petitioned—we have remonstrated—we have supplicated—we have prostrated ourselves before the throne, and have implored its interposition to arrest the tyrannical hands of the ministry and the parliament. Our petitions have been slighted—our remonstrances have produced additional violence and insult—our supplications have been disregarded—and we have been spurned with contempt from the foot of the throne. In vain, after these things, may we indulge the fond hope of peace and reconciliation. There is no longer any room for hope. If we wish to be free—if we mean to preserve inviolate those inestimable privileges for which we have been so long contending—if we mean not basely to abandon the noble struggle in which we have been so long engaged, and which we have pledged ourselves never to abandon, until the glorious object of our contest shall be obtained—*we must fight !* I repeat it, sir,—*we must fight !* * * I know not what course others may take ; but as for me (cried he, his arms raised aloft, his brow knit, and his whole frame as if on fire with the enthusiasm which inflamed him), give me liberty, or give me death !" These heart-stirring passages show, that, though Henry's delivery may have been as magically impressive as it is said to have been, yet his oratory rested not for its effect on that charm alone.

Patrick Henry's speech threw Virginia into arms, and decided the character of the coming contest, giving it a warlike complexion. Nor did he hesitate to follow up his words by acts. At the Virginian capital of Williamsburgh, twenty barrels of gunpowder were taken from the state by order of Lord Dunmore, in order to cripple their means. Henry instantly stepped forward, harangued the people of Newcastle, and soon after marched upon Williamsburgh at the head of a large force. Lord Dunmore was forced to submit, and make full restitution. When the contest fairly broke out, the subject of our memoir headed the first warlike operations in Virginia, and received a high command in the army. Some slight led him to resign, but he was even more usefully employed in the government of Virginia, which he held three several times. He would have been elected again, but, jealous even of his own assumption of a monopoly of honors, the patriot firmly refused it. When peace was established, Henry confirmed the high opinions of his statesmanship, which he had earned by his provincial management, by the share he took in laying the foundations of the new republic. More particularly did he show at once his wisdom and his humanity by coming forward, in the face of the most bitter opposition, to advocate the recall of the British refugees. This conduct was

the more peculiarly honorable to him, as his fortunes had suffered so severely during the seventeen years' turmoil, that he was compelled, at the age of fifty, to quit public life, and return to the bar. The speech pronounced by him on this occasion is a model of subdued and reflective eloquence. His peroration said to the Assembly—"Discard from your bosoms fears so groundless and prejudices so disgraceful—unfetter commerce—let her be free as air; depend upon it, she will range the whole creation, and return on the wings of the four winds of heaven to bless the land with plenty." His proposition was carried, and its beneficial effects were soon seen in the peopling of the yet untrodden wilds of the country.

So high was the reputation of Henry, that within six years after his return to the bar, he was enabled to retire with an ample independence. Some of his speeches of this era have been preserved, and more particularly one on the question whether British subjects were entitled to the payment of debts contracted to them before the war. Henry was employed to argue the negative; and his speech, which lasted for a whole day, would alone suffice to prove that the commanding order of his intellect was the real source of Henry's success. His main argument was, that the British confiscated and ruined all opposed to them as far as they were able. His advocacy of the recall of the British shows how little illiberality there really lay in his own heart.

Henry stepped out again on the floor of the Virginian Assembly, to which the mere wish introduced him at will, when the new constitution was proposed. He was a sincere republican, yet not even his deep regard for Washington could prevent him from feeling and expressing alarm at the creation of a presidentship. He beheld in such an officer but a disguised monarch, and trembled at the danger that might arise from the power and favor of an army. He was unsuccessful in his opposition in the Virginian senate, but, sincere in his sentiments, he stood a candidate for and obtained a seat in the National Congress, determined still to oppose it there. But, though his mental energies were unimpaired, his health had now begun to fail, and ere the congress met, Patrick Henry was in his grave. He expired on the 6th of June, 1799. In the year before he died, it may be mentioned, Bonaparte had overthrown a series of Austrian armies, and Henry was heard confidently to predict the occurrence in France of what he dreaded even in his own more steady country. If Washington nobly falsified his fears, Bonaparte fully proved his prophetic foresight.

Every successive step which Patrick Henry took in his course through life, showed him to be no ephemeral upshoot of an hour, but a great-minded and great-hearted being, fitted to exercise a comprehensive influence on his age. He must ever rank among the great founders of American liberty. No man can be named, indeed, who so directly contributed to nurse the spirit which led to that mighty and important issue.

DIGNITY does not consist in possessing honors, but in deserving them.

USES OF THE POTATO.

THE uses to which the potato may be put, besides the obvious ones of food, starch, sugar, and spirits, are much more various than most people are aware of. In Thuringia and Saxony, it is made into a kind of cheese, which will last for years if kept in close vessels. To pursue the description given in the "Quarterly Journal of Agriculture"—"It is prepared by boiling the potatoes, and reducing them, when cold, to a pulp, rejecting the skins. Sour milk is added, or else sweet curd with the whey pressed out, in the proportion of a pint to five lbs. of pulp. It is kneaded several times, drained in small baskets, and simply dried in the shade. In some parts of Germany, potatoes are put to another use. The lower classes are accustomed to incorporate them, after being steamed and reduced to a paste, with the butter to be spread over bread. It thus goes farther where economy is studied; and, that it may longer be preserved, is often salted. It will surprise many to learn that a mode has been suggested by a French chemist for converting potatoes into a substance like coffee. He mixes some of the best olive-oil with a certain portion of dried potato flour, and then adds a small quantity of coffee-powder. He asserts that this will produce a liquor more agreeable than coffee. Chemical ingenuity has likewise converted this most useful root into substitutes for many other articles—as chocolate, tapioca, and vermicelli. The use of potato-starch instead of arrow-root I have already mentioned; and much of it is at present sold under the name of arrow-root, and in France under that of *féculé de pomme de terre*. A chemist in Copenhagen has discovered that the flowers of the plant may be used in dyeing. By this means a beautiful yellow color may be obtained, which is solid and durable. By plunging the color into blue, it becomes a perfect green. It has likewise been found that the juice contained in the potato will produce a gray color of great beauty. The liquor drawn off in the process of making potato-starch will clean silks, woollens, or cottons, without damage to the texture or color. It is also good for cleaning waifacots. Potatoes are used with excellent effect in the boilers of steam-engines, for preventing the gathering of a calcareous incrustation on the bottom, which is gradually deposited from the water employed. The potatoes give out a glutinous substance which entangles the particles in the water, and prevents them from incrusting the iron of the boiler. A medical use of the potato has been lately suggested in a valuable French publication, namely, as a preventive of, and even a cure for, the scurvy. Roasted potatoes were administered with perfect success to sailors afflicted with the disorder, after other approved medicines had been given in vain. As roasted potatoes are the most effectual, it seems probable that the remedy depends on some of the substances contained in the black liquid which boils out of potatoes, and which are retained in roasting."

He who is always finding fault with himself, will find little fault with others.



Aurora Borealis.

AURORA BOREALIS.

FROM the accounts which have been collected of the polar lights, it would seem that the phenomenon was less frequent in former ages than it is now; but it must be kept in mind that meteoric observations have not always been so much attended to as at present. Aristotle, who died 322 years B. C., describes the phenomenon with sufficient accuracy in his book of meteors. Allusions are also made to it by Pliny, Cicero, and Seneca; so that it must have been often witnessed by the ancients, even in the climates of Greece and Italy. The descriptions of armies fighting in the air, and similar prodigies, observed in the dark ages, doubtless owed their origin to the striking and fantastic appearances of the northern lights. It is remarkable, however, that no mention is made by any English writer of an aurora borealis having been observed in England from the year 1621 to 1707. Celsius says expressly that the oldest inhabitants of Upsala considered the phenomenon a great rarity before 1716. In the month of March in that year a very splendid one appeared in England, and, by reason of its brilliancy, attracted universal attention. It has been described by Dr. Halley in the *Phil. Trans.*, No. 347. Since then, the meteor has been much more common. A complete account of all the appearances of auroras recorded previous to 1754 may be found in the work of Mairan, '*Traité de l'Aurore Boreale*.'

The aurora is not confined to the northern hemi-

sphere, similar appearances being observed in high southern latitudes. An aurora was witnessed by Don Antonio d'Ulloa, at Cape Horn, in 1745; one appeared at Cuzco in 1744; and another is described by Mr. Forster, (who accompanied Captain Cook in his last trip around the world,) which was seen by him in 1773, in latitude 58° south, and resembled, entirely, those of the northern hemisphere, excepting that the light exhibited no tints, but was of a clear white. Similar testimony is given by subsequent navigators.

No satisfactory theory has yet been given of the cause of the polar lights. Mairan ascribed the phenomenon to the sun's atmosphere; Euler, to particles of the earth's atmosphere driven beyond its limits by the impulse of solar light. Beccaria, Canton, Franklin, and others, refer it to electricity, an agent to whose mysterious influence all the inexplicable phenomena of meteorology are conveniently ascribed. An absurd theory proposed by M. Libes (*Dictionnaire de Physique*) formerly met with considerable favor. He had observed, that on passing an electric spark through a compound of oxygen and nitrogen, nitrous vapors of a reddish color are produced. He therefore supposed that the higher regions of the atmosphere near the pole contained little or no hydrogen; and that, consequently, the discharges of electricity, which, by producing a combination of oxygen and hydrogen from water in the lower strata, in the more elevated strata produce nitrous vapors, which constitute the polar lights. That some



Ur of the Chaldees.

connexion subsists between the aurora and magnetism, or rather electricity, which is now regarded as the primary cause of magnetism, is made certain by the fact that, during the continuance of brilliant aurora, the magnetic needle is generally disturbed, sometimes violently agitated. The air, at the same time, is often observed to be highly charged with electric matter. An experiment contrived by M. Canton also seems to indicate an electric origin. If a glass tube be partially exhausted of air, hermetically sealed, and applied to the conductor of an electric machine, the whole tube is illuminated from end to end, and continues luminous for a considerable time after it has been removed from the conductor. If, after this, the tube be drawn through the hand, the light will be remarkably intense through its whole length; and if it is grasped in both hands, near the extremities, strong flashes of light will dart from one end to the other, and continue many hours without fresh excitation. The only conclusion which, in the present state of our knowledge, we are warranted in deducing, is, that the aurora borealis must be ascribed to the agency of electricity in the upper regions of the atmosphere. In what way the excitement is produced, it remains for future discoveries to make known.

Many seem to obtain a secret abhorrence for the retired walks of life. To be known is their most anxious wish. Some prefer even an infamous notoriety, to a virtuous and honorable obscurity.

I am sent to the ant, to learn industry; to the dove, to learn innocence; to the serpent, to learn wisdom; and why not to the robin-redbreast, who chants it as delightfully in winter as in summer, to learn equanimity and patience?—*Warwick*.

UR OF THE CHALDEES.

THE birthplace of Abraham has been generally regarded as a town; but such Orientalists as have of late years had occasion to express an opinion on the subject, have been rather disposed to regard it as the name of a district. As such, there is little reason to question that it is that which the sacred text indicates, as it comprehends both the towns in which the names mentioned in this part of the history have been sought. Of these one is the town called by the Syrians Urhoi, and by the Arabians Orfah, or Urfah, which the Moslems firmly believe to be the Ur of the text; and the Jews and Christians of the country acquiesce in this conclusion. This town is situated at the foot of the mountains of Osroene, at the head of the great plain which was formerly so called, and is still a place of some consideration. Cartwright says: "The air of this city is very healthful, and the country fruitful. It is built nearly four-square, the west side standing on the side of a rocky mountain, and the east part trendeth into a spacious valley, replenished with vineyards, orchards, and gardens. The walls are very strong, furnished with great store of artillery, and contain in circuit three English miles, and for the gallantness of its sight it was once reckoned the metropolitan seat of Mesopotamia." This traveller, as well as one who preceded him, Rauwolf, heedless of the analogy of name, regards Urfah rather as representing Haran than Ur. Although we think, ourselves, that a district is probably denoted, we have introduced a view of the town of Urfah, not only from respect to the common opinion, but because we suppose it was built within, and took its name from, that district.

DECISION.

ALL wisdom is a system of balances. It is allowed that caution and deliberation are good things; but in many circumstances these are false friends, and it is found afterwards that a less considerate policy would have been best. Again, however, it would be very wrong to counsel a bold policy as invariably preferable to a cautious one; it would often be found dangerous. There is, in short, no maxim which is a specific: conditions modify the eligibility of every one of them.

With regard to decision in conduct, the first great point is to know what to decide upon, and the second to know if the plan adopted should be unflinchingly carried out. Many men are remarkably decisive without being wise, or finding their choice a fortunate one. Many hold firmly enough to their plan, when wisdom would rather recommend its being abandoned. Decisiveness of conduct is, in such cases, manifestly no advantage. But when a quick and far-seeing sagacity has once chosen a right course, it is well to adopt it unhesitatingly, cordially, fully, and to go through with it with boldness and energy. Then is decision in conduct found to be a valuable quality—but then only. There is no point in which more mistakes are made. A vast number of men think they are acting with decision, when they are simply rash and headstrong. Many believe they are *thinking* with decision when they are merely uncandid towards all opposing considerations, wise in their own conceit, and perilously obstinate.

It often happens, nevertheless, that decisive men of this kind can point to their happy instances. Conduct like theirs is now and then attended by good fortune. But such cases are only like the dreams that prove true—strongly remarked, while all the false ones are lost sight of. They no more justify the rashness and obstinacy of the parties, than does a death happening soon after the hearing of the death-watch prove that there is a connexion between the perforations of the insect and human mortality. These instances are the ruin of the unwise decisive men, for they encourage the fatal failing. Perhaps successful in one case, which involved no important results, they are emboldened to try the same plan in a very different one, and are sadly punished. Such blindfold decision is, indeed, only a kind of gambling.

In aiming at decisive thinking on controversial subjects, and at the duty and credit of holding fast by opinions, it is important to guard against similar errors. It is easy, by shutting one's eyes to every thing that can be said on the opposite side, and getting one's self-love interested in the matter, to obtain a very comfortable set of very decided opinions, and thus become a respectable sort of wronghead or bigot. But it is not so easy, out of the contending considerations on all sorts of difficult questions, to select such as may form a reasonably sound set of opinions, in adherence to which there may be genuine usefulness and real honor. On the contrary, many of the soundest heads have been amongst the most hesitating on a certain dubious class of subjects. It is easy to laugh at the difficulties and doubts of a Lord

Eldon, and to admire the nimbleness of some other men in the same situation; but it is by no means certain that quick decisions in law, any more than in speculative questions, are the best. Mr. Canning describes a man as swearing,

—“With keen discriminating sight,
Black's not so black, nor white so very white.”

But, though such a manner of speaking is apt to convey a notion of weakness or hesitation, we should remember that the patient separation of the true from the false, and the correct adjustment of the respective limits of both, are amongst the highest efforts of the logical intellect. Perhaps there are some things on which to talk decisively is only to make an open declaration of short-sightedness and folly.

We see more clearly the value of decision in conduct than that of decision in forming a set of abstract opinions. It must ever be of vast consequence to be able to decide at once upon what is the best course of procedure in any of the affairs of life. It often happens that the reasons for taking a particular step are made a little obscure and dubious by the presence of some advantage connected with the opposite course, or by a difficulty and disadvantage attending the right one. For example, in the great fire at Hamburgh, it became evident that no expedient for stopping the conflagration would be effectual but the forming of a gap in the buildings. Here the great difficulty of the senate was to determine on making a large enough sacrifice of buildings, for the buildings were of course valuable, every body was interested for the saving of his own house, and there was still the hope that the flames might not come so far, in which case the sacrifice would have been made needlessly. On the other hand, the risk from making too small a sacrifice was obvious, for the fire was advancing, and it might come up to the site marked out for a gap before the gap was effectually made, when of course a much larger gap would become necessary. It was a fine case for the exertion of a wise decisiveness of judgment. In this, unfortunately, the senate failed. They could not take a sufficiently liberal view of the required sacrifice. The gap which they made was made in vain; the flames went on, and were only finally stopped by a perhaps ten times greater sacrifice.

One of the finest examples of this wise decisiveness on record occurs in the earlier part of Napoleon's historical life. He had made his wonderful irruption into Northern Italy, and overthrown great bodies of the Austrian troops. Little seemed wanting to complete the conquest of Lombardy but the taking of Mantua, to which he devoted 10,000 of his troops. At this juncture he heard of the approach of a new Austrian army, consisting of 60,000 men, while he had in all only 40,000. By marching quickly along the banks of the Lake of Garda, they cut off his retreat to Milan, which he felt to endanger his position very materially. But the Austrian army came on both sides of the lake, 20,000 on the one and 40,000 on the other. Napoleon determined to take a position at the end of the lake, so as to be between the

two parties when they came to join. To pursue the narrative of M. Thiers:—"By rapidly forming a main mass, the French might overpower the 20,000 who had turned the lake, and immediately afterwards return to the 40,000 who had defiled between the lake and the Adige. But to occupy the extremity of the lake, it was necessary to call in all the troops from the Lower Adige and the Lower Mincio; Augereau must be withdrawn from Legnago and Serrurier from Mantua, for so extensive a line was no longer tenable. This involved a great sacrifice, for Mantua had been besieged during two months, a considerable battering train had been transported before it, the fortress was on the point of capitulating, and, by allowing it to be revictualled, the fruit of these vigorous efforts, an almost assured prey, escaped his grasp. Bonaparte, however, did not hesitate; *between two important objects, he had the sagacity to seize the most important and sacrifice to it the other*—a simple resolution in itself, but one which displays not alone the great captain, but the great man. It is not in war merely, it occurs in politics and in all the situations of life, that men encounter two objects, and, aiming to compass both, fail in each. Bonaparte possessed that rare and decisive vigor which prompts at once the choice and the sacrifice. Had he persisted in guarding the whole course of the Mincio, from the extremity of the Lake of Garda to Mantua, he would have been pierced; by concentrating on Mantua to cover it, he would have had 70,000 men to cope with at the same time—60,000 in front and 10,000 in the rear. He sacrificed Mantua and concentrated at the point of the Lake of Garda." The consequences were an admirable reward of the genius shown on the occasion. He first met the corps of 20,000 under Quasdanovich, or rather its advanced parties, which he easily drove back. The Austrian general, surprised to find everywhere imposing masses of the French, was awed, and resolved to halt till he should hear of the other corps under his commander Wurmser. Here the Napoleon genius was again shown, for, guessing what was passing in Quasdanovich's mind, he contented himself with having brought him to a pause, and turned to meet the other party. Of this corps a large portion had passed on with Wurmser to Mantua, leaving 25,000 behind under Bayalitsch. This army advanced with wide-spread wings to envelop the French; but Napoleon penetrated its weakened centre; it lost courage, and withdrew. The French pursued and greatly damaged it. Other actions ensued; and in six days from the commencement of hostilities, the Austrian generals were again in retreat to the Tyrol, having lost 20,000 men and the kingdom of Lombardy.

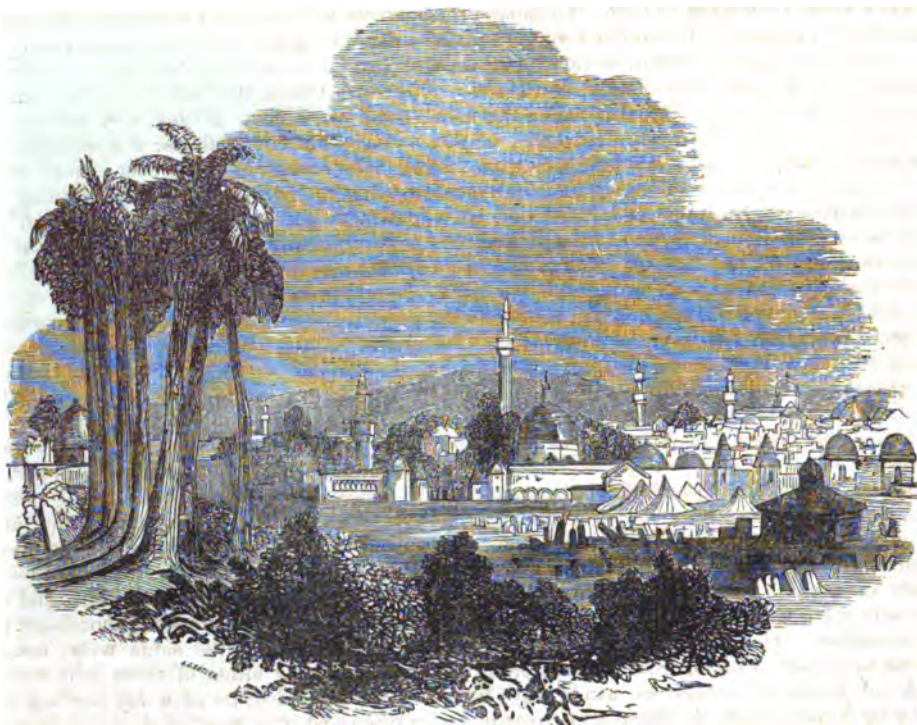
In private life, this firmness in making judicious sacrifices is often of great importance. It is as necessary to know when to make such sacrifices, and, it may be added, when to undergo great hazards, as it is to know when to embrace favorable opportunities. Many a commercial man has saved the bulk of his fortune by being able to bring his mind, at some nice juncture, to incur a certain loss, or to expose himself to some considerable risk. It requires a certain liberality of nature to act in this way. The race of

narrow wits lose all by clinging desperately to some coward maxim which they can only interpret literally. "Never lose certainty for hope," "A bird in the hand is worth two in the bush," are their favorite adages—and very good adages they are in most circumstances, but not in all, for it sometimes happens that to make a venture is the best course, not merely for making an advance, but for retaining the present position; and it is abundantly clear that, had those maxims always been adhered to, the world must have stood still almost from the beginning. The liberal-minded, on the other hand, can give a wide enough interpretation to such apothegms, and, if possessed of wisdom, know exactly in any particular case whether they should be rigidly observed or not. To attain to this liberality of mind and this power of judging, and to be able to act vigorously and perseveringly in the course adopted, are the grand requisites in this branch of the philosophy of life.

A hesitating, indecisive, and over-cautious manner serves as ill in the most simple and familiar affairs as in the highest; and its consequences are in proportion as bad. To have two things which we wish to do nearly about the same time, and to try to embrace them both in the same morning's labors, or accomplish them by the same walk, usually leads to their not being either of them done well, or in time. The whole pleasure of a day devoted to that object is often lost by a want of decision as to the mode of procedure, or the things to be attempted or done, while all would have been well if a right and rational plan had been started with and rigidly adhered to.

In short, and in fine, decision is a most important quality in all affairs, and particularly in affairs of difficulty; but rashness is not decision; uncandor is not decision; headlong, blundering stupidity is not decision—no, it is only to be exemplified by those who, with expanded and sagacious minds to appreciate circumstances and judge of what is best to be done, possess the firmness to go straight forward with an enlightened resolution.

A WORD FOR BOOK-BORROWERS.—Those who have collected books, and whose good nature has prompted them to accommodate their friends with them, will feel the sting of an answer which a man of wit made to one who lamented the difficulty which he found in persuading his friends to return the volumes which he had lent them. "Sir," said he, "your acquaintances find, I suppose, that it is much more easy to retain the books themselves than what is contained in them." I would just observe here, that nothing can be more mean and unkind than to borrow books of persons, and to lose them, as is too frequently the case. If my friend gratifies my request in lending—if, by so doing, he saves me the expense of purchasing—or if, also, by the loan, I gain considerable information, or intellectual profit—it is base and ungrateful either to suffer the book to be injured, or not to return it. I give this as a hint to some who are more in the habit of *borrowing* than *returning* books.



View of Damascus.

DAMASCUS.

THE city of Damascus we find noticed in Gen. chap. xv. 2, as the birth-place of Abram's steward Eliezer; and it must therefore have been one of the earliest cities in the world, and is one of the very few that have maintained a flourishing existence in all ages. It is situated in E. long. $36^{\circ} 25'$, and N. lat. $33^{\circ} 27'$, in the north-west of an extensive and remarkably level plain, which is open eastward beyond the reach of vision, but is bounded in every other direction by mountains, the nearest of which—those of Salehie, to the north-west—are not quite two miles from the city. These hills give rise to the river Barrady, and to various rivulets, which afford the city a most liberal supply of water, and render its district one of the most pleasant and fertile of Western Asia.

The district, within a circumference of from twenty to twenty-five miles, is thickly covered with well-watered gardens and orchards, in the midst of which stands the town itself. It thus appears as in a vast wood; and its almost innumerable public buildings, including an extensive citadel, and a vast number of mosques, with their domes and minarets, give it a fine appearance as viewed from the neighboring hills; but on approaching over the level plain, the plantations by which it is environed shroud it entirely from view. Its finest building is a grand mosque, of the Corinthian order, said to have been built as a cathedral church by the Emperor Heraclius. It was dedicated to St. John of Damascus, and is still called the mosque of St. John the Baptist by the Turks,

who believe that in the latter days Jesus shall descend thereon, and from its summit require the adhesion of all his followers to the Moslem faith.

The city is surrounded by an old wall of sun-dried brick, strengthened with towers; but this wall has fallen to decay, and the town has so greatly extended beyond its limits, that the number of houses without the wall greatly exceeds that within. The houses in the city have flat roofs, while those in the suburbs have domes. Damascus is said to contain five hundred mansions entitled to be called palaces; and the general splendor of its houses is much extolled in the East. But little of this is visible in the streets, which in general present walls of mud or sun-dried brick, which fill the narrow streets with dust in dry weather, and render them perfect quagmires when it rains. The houses themselves are built with the same materials, although stone might be easily obtained from the adjoining mountains. The streets present scarcely any windows, and only low and mean-looking doors; but these often conduct to large interior courts paved with marble, refreshed by gushing fountains, and surrounded by apartments ornamented and furnished in the best and richest oriental taste.

The thirsty Arabs from the desert regard Damascus with rapture, and are never tired of expatiating on the freshness and verdure of its orchards, the variety and richness of its fruits, and, more than all, its numerous streams, and the clearness of its rills and fountains. There is a tradition, that Mohammed, coming to the city, viewed it with great admiration from the mountain Salehie, and then turned away,

refusing to approach, with the remark, that there was but one paradise designed for man, and he was determined that *his* should not be in this world; but there is no historical foundation for this story. Damascus is about six miles in circumference, and its population is estimated by Mr. Buckingham at 143,000; of whom 90,000 are native Syrian Arabs, 10,000 Turks, 15,000 Jews, and 25,000 Christians. But Dr. Richardson does not estimate the Christian population at more than 12,000. Damascus is the rendezvous of many thousand pilgrims who proceed to Mecca in one great body every year, and many of whom make a considerable stay before the caravan departs, and most of whom unite commercial with religious objects, loading their beasts with the produce of their own countries, which they dispose of on the road, bringing back in the same manner the products of India, received from Jidda, the port of Mecca. This has contributed greatly to the prosperity of Damascus, which is also the emporium of an extensive caravan trade with the ports of the Mediterranean on the west, and with Bagdad on the east. Damascus has obtained fame for some of its manufactures. The fine temper of its sword-blades has long been proverbial. This reputation has, however, of late years much declined; but the Damascenes still excel in the art of inlaying metals with gold. The manufacture of the kind of silk called "Damask," originated here.

It would seem from 1 Kings xi. 23, 24, that Damascus first became in the time of David or Solomon the capital of an independent kingdom, which afterwards, as the "kingdom of Syria," was engaged in frequent wars with the Jews. It was ultimately annexed to the empire of Assyria, and afterwards, with the rest of Western Asia, passed to the Greeks, then to the Romans, and at last to the Arabians, under whom Damascus became for a time the capital of the califate, when Moawiyah, its governor, assumed that office, in opposition to Ali. It underwent many changes during the disorders of the middle ages, and was finally conquered, along with all Syria, by the Sultan Selim. In the late war between the Porte and the Pacha of Egypt, Damascus was taken by the troops of the latter, under his son Ibrahim Pacha, and it still remains subject to his authority, having been ceded to him by the treaty of peace in 1833. The inhabitants of Damascus have the reputation of being the most haughty and intolerant people of Turkey, but the measures of Mehemet Ali have already tended greatly to subdue or control their former spirit.

STATE OF AGRICULTURE IN NORMANDY.

It is interesting to the farmer to know how the tiller of the soil in other parts of the world conducts his operations, what his course of crops and modes of culture are, what his implements and animals, and what his domestic and social condition is. With the intention of gratifying this laudable feeling, we shall give a few extracts on the agriculture of Normandy, a province of France, from a paper in the *Quarterly Journal of Agriculture*.

20

Normandy is a province of France, divided into five Departments, and containing about 2,700,000 inhabitants. It differs from most of the southern and eastern parts of France in many important particulars. "Instead of extensive tracts of tillage, without any visible subdivisions to make out the different ownerships, and without trees, except the formally trimmed ones on the road side, Normandy is a continued series of well-timbered farms and fine forests of surpassing beauty, interspersed with corn-fields of small extent, orchards, and meadow or grazing land."

The soil in Normandy is considered the richest in France, in many places highly calcareous, and in general well adapted to cultivation. The farms average about sixteen acres each in extent, and are held under leases of the usual term of nine years. But about one-half of the farms are held by the proprietors; and these proprietors are in a majority of instances farmers of the lowest class, or those who take their own produce to market, and at home live as poor as it is possible to imagine. The following extract will show what the living of the French peasant is:

"Many of this class (the small farmers), like common laborers, dine upon a few apples or pears, and a bit of bread, without the formality of sitting down at table, and are content with a drink of their own home-made miserable cider. It is not easy for an Englishman [or an American] to conceive how a man can work hard upon the washy diet so general in France. We have seen men cutting up wood for fuel (which is hard work), from morning till night, and in the severest winter season, without more nutritious food than indifferent fruit, and a little bread; the soup taken, perhaps, for supper at home, or for early breakfast, is, if possible, worse as a means of support, for it consists merely of cabbage and hot water, with a little grease or kitchen stuff; it distends the stomach with wind, and therefore is totally unsuited to a working man, who should have solid, not liquid diet."

Much cannot be said in favor of the Norman sheep husbandry, as there is little or no free range for them, and they are kept in small lots of three, four, or half a dozen, and usually tied by the legs together, even when they have lambs, a course incompatible with thrift, "and altogether a worse description of sheep cannot be imagined." Attempts are making to improve them by the introduction of the Leicester and South Down.

In the management of their cows and dairies the Normans do rather better, and the quality of their cream and butter cannot be surpassed. The cream alone is churned (not the milk, as in some of the Dutch dairies), and this operation is performed twice a week, so that the cream stands only a short time. A sweet grass pasture in summer, and sainfoin hay in the winter, are considered the best for butter. Beets are sometimes given pretty freely in winter, but though this food increases the milk, it does not improve the butter, and with limited exceptions, neither beets, potatoes, nor turnips are given to the cows that yield the best butter. It is found by experience that "the application of dung imparts in

spring time valuable qualities to dairy pasturage, but the grasses in summer give, on dunged land, a rank flavor to butter."

The Norman dairymen insist that dairy houses should have a northern aspect at all times, as a south wind is prejudicial to milk; that cream should not be left in the milk-room, as they mutually exert a pernicious effect on each other; that the floor should be flagged and washed in summer, to preserve coolness; that in the winter the milk should be strained into pans as soon as possible after milking, while in the summer the cooler it can be made, the better it is for the cream. Pans of common earthenware are preferred to any others, having been found superior even to porcelain.

"The cream is skimmed twice a day generally, sometimes three times, and care is taken always not to leave it too long on the milk. Twenty-four hours (sometimes forty-eight) in summer elapse before the first creaming, and the cream is allowed to lie as short a time as possible before churning. By day the cows are turned out, and at night kept in stables and supplied with sainfoin hay, which is admirable for dairy purposes."

The breed of cows most common and the most esteemed in Normandy, resemble the Alderney, and as this province is adjacent to Alderney, Jersey, and Guernsey, as well as Brittany, there is little doubt of the identity of the Alderney and Norman breeds. The Agr. Association of Normandy have imported from England some fine Short Horn bulls and cows, with the intention of improving the stock of cattle. There is in Normandy a coarse hairy breed of cattle which are much used for the plough and cart, "and four or five of these bullocks or oxen, with three or two horses, make the teams which are extensively used in Normandy."

In the dairy districts the heifer calves are usually reared, while the bull calves are fattened for the market. In some places they are fattened on skim milk, and in others on new milk; and in some districts bread, converted into a kind of pap, is added to the milk to facilitate the process. The Norman hog is of the worst possible description as to form; but when fattened the flavor of the pork, particularly the bacon and hams, is good, and the meat firm.

Centuries ago, Normandy was the country from which the flower of European chivalry derived their best horses. The breed was then large, active, and powerful; but although still active and hardy, it has degenerated in size so much, that the Norman horse is now one of the smallest of European breeds. Of this we have sufficient proof in the small size and hardy character of the French Canadian horse, which is in every respect a true Norman animal. They rarely attain fifteen hands in height, are short necked, have good fore legs, but frequently imperfect hind ones, but as a breed will go faster and do more work than their appearance would at first indicate. Attempts are making to improve the Norman horse by crosses with the best English blood, for the purpose of furnishing horses for the cavalry service; and one of the Government Haras, or stations for stallions provided by the government, is located at

St. Lo. At De Pin are kept 500 horses and mares and at St. Lo about 120 stallions.

The French government do for the provinces, what associations or individuals among us do for agriculture; it furnishes funds for agricultural societies, ploughing matches, &c., and the latter are held by authority of the state. Not long since one was held in the commune of Augerville, for which 1,000 francs were appropriated by government, and the proceedings were as follows:

"The ground being marked out by stakes at equal distances, and five judges appointed, sixteen ploughs came upon the ground: of these fourteen had a pair of horses each, one a pair of oxen, and one a single horse. Nine of these ploughs were of the Norman form. After having ploughed a field which had no particular difficulties, the teams were removed to another full of heath and broom, and the competitors were allowed the use of an additional horse or bullock. Out of the sixteen which had ploughed in the free and open field, only nine appeared on the second trial. In this unbroken and rough field many failures were soon apparent; some stopped short before they had well turned a furrow, seeing that the work was above the power of their cattle or their ploughs; others stood out longer, but made very bad work, and two ploughs only overcame the difficulties under which the others failed. One of these was a new plough called the Grange plough, and the other the Dombasle plough, and to these two, and the one horse ploughs, the three prizes were awarded."

The Grange plough is described as having these advantages:—

"1st. It works of itself, not requiring the hand of a ploughman either to enter the sock into the land, or to keep it in its true direction; a driver only is necessary.

"2d. It can be set at any depth, and turns over the furrow slices at equal and regular depth.

"3d. It moves as easily even on very sloping land as on a flat.

"These effects are produced by a simple kind of mechanism, which can be applied, at the expense of about twelve francs, to any common plough."

But the improved Dombasle plough is the general favorite among the best French farmers. It is modelled from the Scotch plough of Small, but with the defects of that corrected, and is furnished with wheels, as is also the Grange plough.

There is in the paper alluded to a sketch of the system of farming adopted by M. du Moncel, near Cherbourg, on his farm of about 800 acres. M. M. makes potatoes the base of his system of culture, using the drill plough and horse hoe. He has tried turnips and carrots, but has rejected these for the potato, "since, though the first roots are the most productive, the potato is twice as nutritive (comparing equal bulks), besides its increased value as an article of human sustenance." * * * "After various experiments, M. Moncel has determined on a course of eight years, divided into equal periods; in the first four years, he has successively potatoes, barley, clover, and wheat; in the second, buckwheat, colza, wheat, and oats." Of the artificial grasses he gives

a preference to lucern, though he has also vetches and red clover. His potatoes are a large yellow early variety, a red, and a large white for swine. He has tried some twenty kinds, but experience proved these to be the best.

A small stream passes through the yard of M. Moncel, which is made to work machinery for thrashing and cleaning his grain; grinding his barley, wheat, and buckwheat; converting his straw into chaff; and slicing potatoes, carrots, &c. Thus, without leaving the yard, the grain is reduced to flour and bran from the sheaf, and the straw cut for cattle. From this use of power, our farmers might take a useful hint, and in addition to the above operations, the same power might be made to saw the wood of a family, and crush the corn with the cob for the stock.

CANNOT.

We very much question whether there is a word in the English language productive of as much mischief as the one placed at the head of this article. Indeed, it has no business where it is so frequently found; for it is an intruder on our forms of speech, and deemed unworthy of notice by the lexicographer; yet there are some men who are always using it, and find it ever at their tongue's end. The man who admits this word into his vocabulary is regularly done up; henceforth he is good for nothing, because he will perform nothing. We like a man, ay, and woman too, who at proper times can utter a plain plump No; for that little word may be their salvation; but if they meet you with a canting cannot, depend upon it, they will—"for a consideration."

Ask your friend why he runs in debt for things for which he has no possible earthly use; and he will tell you he *cannot* avoid purchasing things when offered at a bargain, even if he has no present use for them. The time, however, will come when there will be a cannot of another nature to arrest him; and that will be when his foolish purchases have so exhausted his finances, and reduced his credit, that no one will trust him.

Ask that farmer why he allows that bottle of spirit to be carried into his harvest-field, and, as the ill-cut and scattered grain attests, to his manifest loss, and he replies that he has been so long in the habit of doing it, that he *cannot* do without it when working hard. All nonsense. Thousands, if not millions, have demonstrated the contrary before his face the present year. The truth is, the farmer loves the "good creature," and his cannot is the partial opiate he forces upon his conscience to disguise the fact.

Ask that farmer why he allows his fields to be overrun with thistles, johnswort, daisies; his crops choked with stein, krout, chess, and cockle; his corn overtopped by pigweeds; and his garden by chickweed, purslain, &c.; and he answers he *cannot* attend to them all, he has so much work to do, that some must be neglected. Such an answer only makes a bad matter worse. It proves that he is a

bad calculator, as well as bad worker. The farmer has no business to plan so much work, as to be unable to perform every part well; and the cannot in the case can deceive no one.

"Neighbor, the bars to your cornfield are very defective, and the gate to your wheat field is so insecure, that I wonder at your leaving them in such a condition, when there are so many unruly cattle running at large." Ah, he answers, I know it well enough. I intended this week to have made some new bars, and had a new gate hung; but I have lost so much time in attending that law-suit, that I *cannot* do it now, and must put it off till next week. The next sunshiny morning, he finds a whole herd of unruly animals in his fields, his crops half destroyed, and a beautiful foundation for another lawsuit laid.

See that poor man, once rich and talented, reeling through the street! He is a sacrifice to this accursed cannot. A beautiful wife has wept tears of entreaty; friends have uttered words of remonstrance; reformed inebriates have taken him by the hand, and pointed out the way by which he may be again a man; but to all the reply, a reply fatal to hope, has been, I cannot. It is a lie. He can. He can forsake his cups; he can again bring joy and gladness to his family; he can again rejoice his friends; but he must first renounce and repudiate this soul and body destroying *cannot*.

Young man, whatever may be your profession or pursuit, if you would hope for success, never use the word cannot. You may as well attempt to swim with a Scotia grindstone at your neck, and a Paixhan shot at your heels, as to expect to accomplish anything worthy of a man while this word is in your vocabulary. When the gallant Miller, at the battle of Niagara, was asked by Scott if he could carry the enemy's batteries; suppose, instead of the determined "I'll try," he had whined out—"I cannot," where would have been his fame, and what the result of that day? Cannot, accomplishes nothing but the ruin of him who uses it.

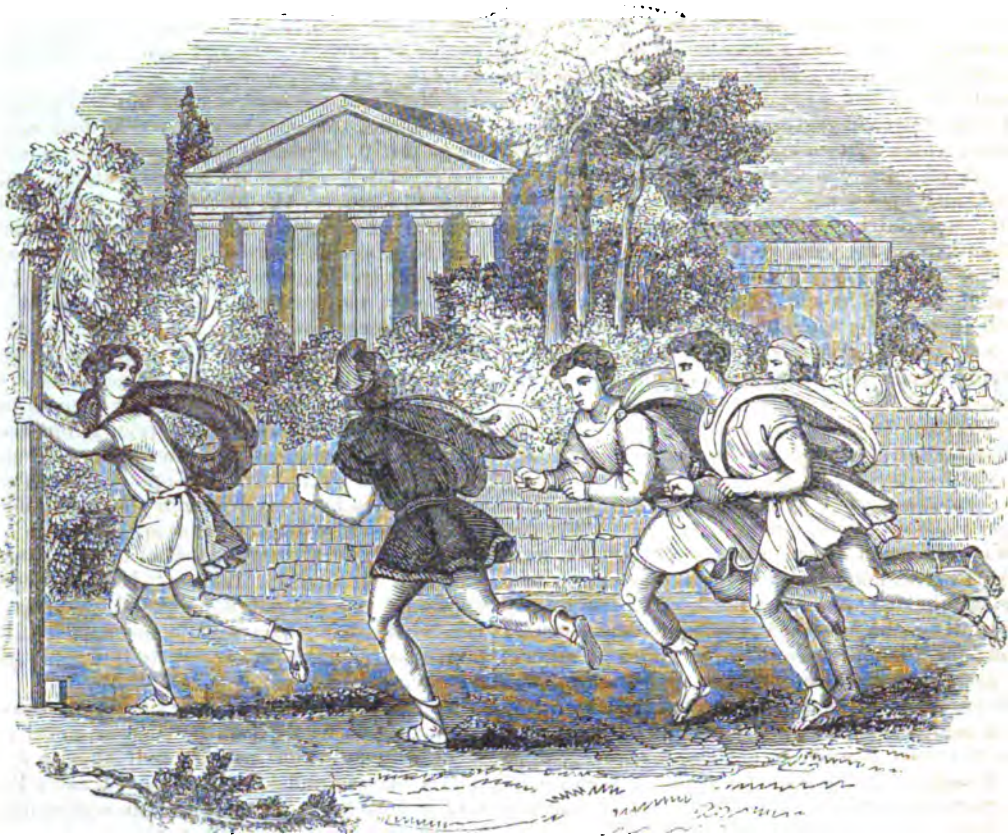
Keep shy of *cannots*. Use not the word yourself, and be careful how you employ those that do. Napoleon never allowed the use of the word impossible; and in the management of a farm there should be no place for cannot. You can do all that is necessary to be done, if you set about it in the right way, and at the right time. If you do not, your labor will be like that of Sisyphus; ever beginning, never ending. Neglect nothing; keep a watchful eye over everything; see that every part moves in harmony, and together; and you will have no use for cannot.

THE Hindoos have the art of personating death, so as to deceive able surgeons.

In marching, soldiers take seventy-five steps per minute; quick marching, one hundred and eight; and in charging, one hundred and fifty steps.

An elephant bred to war stands firm against a volley of musketry, and thirty bullets in the flesh will not kill him.

Fish are drawn towards a light; they assemble to be fed by the sound of a bell, and are fond of music.



Ancient Greek Foot Racers.

ANCIENT GREEK FOOT RACERS.

The principal games of Greece were dignified with the name of *lepoi*, or *sacred*; chiefly, no doubt, because they were instituted in honor of their imaginary deities, and always commenced and concluded with sacrifices. When we reflect on the general character of these games, and notice in particular the cruelties which were practised for the entertainment of the multitude, the perversion of the term is sufficiently apparent, and the degradation of human nature awfully conspicuous. If we would see man in his worst state, we must contemplate those mockeries and barbarities which an idolatrous superstition has imposed upon her unhappy devotees.

Referring the reader to the engraving, which exhibits to the eye the general character of the Olympic race, we propose now to remark upon this particular exercise; not so much with a view to any critical explanations of this part of the ancient entertainment, as to illustrate the apostolic allusions to the subject. In traversing different parts of Greece, for the high purpose of inculcating the principles of the gospel of Christ, the Apostle Paul was occasionally brought into contact with the bustle and excitement of the public festivities; and, like his divine Master, he availed himself of passing events, and surrounding objects, to elucidate the doctrines and duties of

Christianity, without ever giving any sanction to these games, which, as well as modern races and contests, are directly opposed to the spirit and precepts of the Christian religion. On one occasion, in particular, he has furnished the following important and instructive allusions: "Know ye not that they which run in a race run all, but one receiveth the prize? So run that ye may obtain. And every one that striveth for the mastery is temperate in all things: now they do it to obtain a corruptible crown, but we an incorruptible. I, therefore, so run, not as uncertainly; so fight I, not as one that beateth the air: but I keep under my body, and bring it in subjection; lest that by any means, when I have preached to others, I myself should be a castaway."

The first thing to be considered is the severe self-discipline to which those who engaged in the Grecian races were subjected. Having intimated their design of contending, it was necessary for several months to devote themselves to certain preparatory exercises, and to avoid every indulgence that might tend to unnerve or unfit them for the enterprise. In fact, the strictest temperance and even abstinence were requisite to obtain needful vigor and freedom of muscular action, to prepare them for successful competition. "Every man that striveth for the mastery is temperate in all things. I keep under

my body, and bring it into subjection." This is a lesson for Christians; in the pursuit of their heavenly race, it is indispensable to practise sobriety, and to aim, with the utmost assiduity and care, at the due regulation of all the passions of the heart; that their influence may not predominate over the better principle, and that they may not fetter and enfeeble by their flatteries the energies of the sanctified soul. What vigilance, what holy fortitude, what fervent prayer there must be constantly requisite!

The next circumstance regards the effort itself. They were to run and strive. Of the necessity of this, every one who engaged was fully conscious. It would be absurd to think of loitering or turning aside in a race; for eagerness in the pursuit seems an inevitable concomitant of the exercise. No one ever presumed to anticipate success who did not devote himself fully to the object, and call into action the best of his physical powers. It is thus in religion. A man who professes to be a Christian must be in earnest; he must realize the fact that something great is to be done, and that however true and important the sentiment is, that the grace of God is essential to daily progress, and is promised to the devout applicant at the throne of mercy for "every time of need," and every spiritual attainment, yet the exertion is ours; we must strive and run, and vigorously strive for the prize. This we do by repentance, prayer, self-examination, resistance of temptation, diligent observance of ordinances, bold avowals of our principles, and, in a word, by every means which the Scriptures teach us to be requisite to the formation, or conducive to the progress of Christian character.

The prescribed limits, constituting the course, must be taken into the account. This was the *stadium* of the Greeks, or the race-ground, marked out for those who contended on foot, and was about an English furlong in length. Analogous to this in length and limitation is the period of human life, which constitutes the brief extent of the race, and the appointments and commands of the Saviour as the boundaries of Christian obligation.

It was eminently calculated to inspire ardor and produce perseverance in competing in the ancient race, to recollect that many attentive observers were present on the occasion: Thousands and tens of thousands frequented the scene of festive contest, and almost every city and town poured in its contributions of people to witness these celebrated exercises. A very impressive allusion is made to this fact in the epistle to the Hebrews: "Wherefore, seeing we also are compassed about with so great a cloud of witnesses, let us lay aside every weight (or incumbency, which racers naturally do), and the sin which doth so easily beset us, and let us run with patience the race that is set before us; looking unto Jesus, the author and finisher of our faith." Animated with the thought that the eyes of all Greece were upon them, and stimulated by reiterated plaudits from these multitudinous spectators, the racers, as well as other competitors, were roused to extraordinary effort, aware of the glory (so it was deemed) of success, and the disgrace of failure. Above, around, in every

direction to which the racer glanced for a moment, were to be seen the eager watchers of every step and effort. Friends and foes were there, and all Greece, all ages, in a sense, must know the result. And does not a "cloud of witnesses" more numerous, and more solemn spectators, encompass the race-course which is "set before" the Christian? Ministering angels and malignant demons are there: the one to rejoice in and to aid his progress; the other to await, and if possible promote his downfall. The Church of Christ is observant of his profession and his progress, aware what principles are involved, and what consistency demands, in such a public engagement; while the world regards with close and criticising inspection the movements of one who has departed from their community, and pledged himself to another cause and master. The social circle, composed of persons in different degrees of relationship to this heavenly racer, from the nearest friend to the most distant acquaintance, surround his course and mark his progress. Above every other, "Jesus, the Mediator of the new covenant, and God the Judge of all," behold him in this high and holy pursuit. To be approved in the divine sight is indeed a source of inexpressible encouragement and joy; and the inviting, authoritative, and animating language, which proceeds from his ascended Lord, urges him gloriously on: "Be thou faithful unto death, and I will give thee a crown of life."

"Now they do it," says the apostle, "to obtain a corruptible crown; but we an incorruptible." Corruptible indeed! an olive garland, a laurel, a piece of parsley! It was not indeed the common olive, or product of the country, but brought, according to the fables of the age, by Hercules from the Hyperborean Scythians, and planted in the Pantheon, near Olympia, where it flourished like a myrtle. It was denominated *kallistrephanos*, fit for crowns; and it was never to be cut for any other purpose than the victor's garland. The honor was not only insignificant in itself, but temporary; it was valueless and transient as the breath of fame that accompanied it. The next successful racer or combatant extinguished the glory of his predecessor; and many ages since, the crowned and the conquered, laurelled victors and applauding multitudes, have sunk into one common grave! But oh, religion of Jesus, how bright are thy discoveries, how bright are thy triumphs! Thine it is to unveil the blessedness and confer the distinctions which come from God! Can language adequately describe, or human minds conceive, the greatness of the Christian's future reward? It is "a crown that fadeth not away;" "an inheritance incorruptible and undefiled;" "a house not made with hands, eternal in the heavens." Eternity imparts inexpressible grandeur to existence; mean and brief as life is, a vapor, a shadow, and a vanity, its predestined expansion into celestial glory stamps it with undeniable importance. The follower of Christ, the heavenly racer, shall have an infinite recompense; and, amidst all fading things, his possessions, as his principles, will prove to be immortal. Short is the race, perfect the victory, and immeasurable the joy!

THE PLEASURES OF SCIENCE.

"Knowledge, like the light of heaven, is free, pure, PLEASANT, and exhaustless."

In an age and in a country in which knowledge is made subservient to wealth and aggrandizement; in which *practical utility* must be stamped with indelible characters on all a man does and learns; in which money, and the distinction which money buys, is the shrine before which all, or nearly all, bow—recognising, save by profession, no other God, and practising no other religion than that which ministers to avarice and ambition; in such an age and country, even to talk or write of the *pleasures of Science*, exposes one to the charge of being a wild enthusiast; but if he chance to become so enamored of scientific pursuits as to devote the greater part or the whole of his life to them, he is looked upon either as a monomaniac, or as destitute of the usual amount of common sense.

The every-day expression, "I have made money without an education, and my son can do the same," is sufficient proof that there is one class, and a large one too, who estimate knowledge according to its cash value. But even those who make some pretensions to education—who have, to a greater or less extent, formed an acquaintance with the various branches of literature and science—what, it may be inquired, was the object at which they aimed? Was it that they might cultivate the faculties and powers that distinguish them from the brute creation? Was it that they might become acquainted with the beauties and mysteries of Nature? Did they desire knowledge for its own sake? Was it not, rather, that they might be able to live by their wits, acquire money, gain office, and make a figure in the world?

Although the above question admits of but one reply, it is denied that this misapplication of knowledge is owing to any want of adaptation of the mental powers to external things, or to a deficiency of attractions in the various sources of human knowledge within our reach. There is, indeed, no principle of human nature more powerful than the desire of knowledge, as is attested by universal experience and observation. Most strikingly do we see this principle exhibited in the untutored child, who has not yet been taught, by parental example and precept, that to get money is "the chief end of man."

The Author of our natures, without doubt, designed that this deep-rooted principle should have an ample field for its expansion and gratification; and that pleasure of a refined and exalted character should be the universal accompaniment of intellectual pursuits. But, like the faculty for the enjoyment of corporeal pleasures, which is equally a divine gift, this higher, nobler faculty, has also been perverted; and instead of deriving the greatest gratification from the acquisition of useful knowledge, and in climbing the rugged heights of science, the mind, enervated and debased by long indulgence, turns to occupations that require less mental exertion, and which afford at the same time food suited to its morbid appetite. Hence it is that fiction and

the marvellous tale engross so large a proportion of the intellectual effort of the present day.

Compare the novelist—as Scott, Cooper, Bulwer—with a Newton, a Franklin, a Galileo; if the first derived pleasure from the contemplation of fiction, by what name, or rather what kind of pleasure shall we denominate that experienced by the latter in the investigation of those sublime truths which they were permitted to discover and reveal to mankind? And if the admirers of the former experience pleasure in the perusal of their works, how shall we designate the feelings of those who delight in the study of the great laws of the universe, taught by the latter? Is there a radical difference in the mental constitution of these two classes of individuals? No; the mind is not originally averse to the investigation of truth, even in its more abstruse forms; and much less is it averse to the contemplation and study of that infinite variety of objects and phenomena embraced in the different departments of natural science; but it has acquired a disrelish for such pursuits by the operation of various causes incident to the prevailing habits and customs of civilized society. Like the corporeal taste, vitiated by high seasoned food, suited to tickle the palate but to offend the stomach, so the mental taste has lost its relish for substantial aliment, and craves food of easier digestion, stimulating in its effects, the product of an excited and feverish imagination.

If, then, in the original constitution of the mind, we find capacity for high intellectual enjoyment; if its Great Author intended that it should be susceptible of indefinite expansion and improvement; how can we doubt that the same beneficent Being has supplied a fountain, "pure and inexhaustible," from which to satisfy the desire of knowledge implanted within us? And whither shall we look for that fountain but to the great store-house of Nature; the innumerable and diversified objects which she presents; the laws and phenomena there opened to view; all of which give evidence of infinite skill and intelligent design in their mutual adaptation to each other, and to the wants, to the felicity and improvement of the human race.

The investigations of science, and the application of the great principles, thereby revealed, to the purposes of life, have done more to effect the modern improvement of society than all other causes. Contrast civilized with savage life; the stately mansion with the lowly hut; the proud vessel that rides upon the mighty deep, directing its pathless way by a simple needle and the stars of heaven, with the unstable bark, borne from river to river on the red man's back. These are the triumphs of Science. She has given a new aspect to social existence, by improving the arts and multiplying the enjoyments of life. She has increased the facilities of navigation and commerce, manufactures, agriculture, and the minor branches of industry. She has penetrated the bowels of the earth, extracted the hidden ore, converted it into roads of iron; and, with the aid of fire and water, dispensed with animal strength, and almost annihilated space itself. She has explored the fathomless ocean, brought to light the vast treasures

that have, from time to time, sunk beneath the briny wave; and again has she soared aloft into illimitable space, and, borne on the wings of the wind, wended her way through the regions of upper air. She has not only given us the most perfect control over that wonderful agent "steam," by means of which remote sections of country, and even distant continents, are almost united; she has done more; by the improved modes of telegraphic communication, intelligence, to any extent, may be conveyed, from city to city, and from country to country, with the velocity of light. These are some of the triumphs of Science.

Indeed, the slightest survey of the progress of human society, and the most superficial acquaintance with the history of man, will convince us that to the cultivation of science, and its application to the multiplied necessities of life, we are infinitely indebted for the improved condition of our existence.

But it is the *pleasures*, and not the advantages of science, that we have chosen as our theme. Each presents an unbounded field; and they are, indeed, so intimately connected, that he who aims at the one will also attain the other; he will be benefited not only as an individual, but society will reap the advantage of his labors. It is, however, as a source of pleasure, pure and unalloyed, that we wish to regard the study and pursuit of the Natural Sciences. Here we are met by the calculating utilitarian, who declares it to be a useless waste of time, and beneath the dignity of a *man*, to engage in any pursuit for the sake of the pleasure it affords, and especially in one which acquaints us with objects so far beneath our notice, as are the stones, the insects, and the plants under our feet. What, call that an unworthy occupation which makes us acquainted with the handiwork of the Almighty! When he had created all things, did he not pronounce them "good?" And shall we dare to look with contempt upon what he has thus exalted, and regard as unworthy our attention those objects which required, in their creation and organization, the energies of an infinite mind? Take the most insignificant insect that crawls in the dust beneath our feet; view it under the microscope; how curiously and wonderfully made! his structure is as perfect, in its kind, as that of man; and who will venture to assert that it did not require as great an effort in the Eternal Mind to create the one as the other? Beneath our dignity to give exercise to one of the strongest principles which the God of Nature has implanted within us! Why thus constituted? Why do we behold beauty and loveliness in the workmanship of Nature, if we are forbidden to study and admire them? Why is it that, when we leave behind us the works of Art, and contemplate those of Nature, we see only symmetry, beauty, grandeur, if it does not arise from an inherent faculty of the mind, and if the objects which excite these emotions are unworthy our regard? Does any one say that he is a stranger to these emotions; that he has no "taste" for the study of the works of Nature? We can only say that he has wrongfully perverted the taste which nature gave him, and that he is destitute of the very first elements of happiness.

To the lover of Natural Science, the earth, with

the infinite variety of objects, animate and inanimate, with which it abounds, presents a boundless field for investigation, and one in the study of which he never tires. Where the vulgar eye sees only a shapeless mass of rock, which conveys to his mind no other idea than that of chaos, he will read the history of the past, trace the wonderful changes which our earth has undergone since its creation, and discover what was its aspect long ere it became the abode of man. Where others can see naught but monotonous plains, dismal forests, and hideous mountains, he is enraptured with the beauty, grandeur, and sublimity of the scenes before him. From objects which to others appear void of interest, he is taught a lesson which renders him wiser, better, happier. See him as he stoops to admire the humble plant at his feet; in the structure of its stem, the leaves, the flower, the organs of reproduction, he beholds symmetry, beauty, and design; and he regards it as the handiwork of a wise and beneficent Architect. Even the insect, engaged in its toilsome labors, affords him an instructive lesson of patience and industry. Who but a naturalist would have detected in the lowly ant the exercise of skill and judgment that rival even man's boasted genius? in their habitations, organized societies, government, and rulers, imitating with wonderful accuracy the "lords of creation." And not only in civil, but in military affairs, displaying a knowledge of tactics and discipline which is astonishing to the beholder. The right of territory has been infringed, or a treaty violated; and, being unwilling to abide by the decision of an umpire, war is declared. Throughout their respective territories, embracing the extent of a few feet or rods, preparations go briskly forward; before the main army is led forth, scouts are sent out to reconnoitre; with a vanguard, the forces of one proceed to invade the territory of the other; but ere they have reached the outworks, the alarm has been spread, the warriors are mustered and led forth to meet the foe. The commanders on either side endeavor to inspire their soldiers with courage; when, perhaps, some champion, Goliath-like, steps forth and challenges to single combat. The challenge is accepted, and seizing each other by the mandibles, they engage in deadly fight; the fortune of the day is on the eve of being decided, when the contest becomes general; prisoners are taken and sent to the rear to await in fearful expectation their impending fate, if their captors prove victorious. At length a retreat is sounded, the defeated army, abandoning its slain and wounded, and leaving their former habitations in the hands of the victors, remove to a more distant and secure retreat.

This is not a fancy sketch; it is the delineation of a real battle between certain species of ants, not on quite as extensive a scale, to be sure, as are some of the battles recorded in history, but not less worthy of admiration. And no doubt these ants boast of their Bunker Hill, their Waterloo, their Thermopylæ; and warm with patriotism when they hear encomiums lavished upon their Washingtons, their Bonapartes, their Alexanders. Man, vain-glorious as he is, may look at these mimic battles and heroes, and learn

to place a just estimate upon what the world calls glory.

But not the follies alone of man are imitated by these smaller specimens of nature's productions, but in works of utility, of skill, and of magnificence, they not only imitate, or rather are themselves imitated by man, but they far surpass him. Observe with what ingenuity the bee constructs her cells. These are invariably made of six sides; because if they were cylinders there would be a waste of space between the cells, and if they were made with three or four sides the angles would have been too acute for the young insect that is to occupy them. Again, the floor of the cells is formed by the meeting of three planes at an angle of 110° , and this the mathematician has found to be the best adapted to the support of a floor or roof. Who taught the bee to apply principles which man is able to discover only by a long course of mathematical reasoning? The same Being has instructed her, and supplied her with the means, to gather from every variety of flower a pure and sweet nectar, from which she elaborates the product of which her beautiful structures are formed; and he has also furnished her with a kind of basket in which she carries the fine ambrosial dust, which after being kneaded by her into a paste, constitutes the chief subsistence of herself and young. Furnished with all the implements necessary to collect and prepare the materials, and fashion her cells with the most perfect symmetry, the bee affords, perhaps, one of the most remarkable instances of instinct to be met with in the animal kingdom. Well might the Greek writer, Pisidius, ask, "Who taught the bee, that wise workman, to act the gnomon, and to erect her three-storied houses of hexagonal structures?" These wonderful edifices have been the admiration of every age.

Not to multiply examples illustrative of the attractions that abound in the different departments of Natural History, the following beautiful extract from a letter of the distinguished American Naturalist, Wilson, will show that the happy influence upon the mind of an enthusiastic admirer of Nature's treasures has not been over estimated; he is writing to his friend Bartram.

"That lovely season is now approaching, when the garden, woods, and fields, will again display their foliage and flowers. Every day we may expect strangers, flocking from the South, to fill our woods with harmony. The pencil of Nature is now at work, and outlines, tints, and gradations of lights and shades, that baffle all description, will soon be spread before us by that great Master, our most benevolent Friend and Father. Let us survey those millions of green strangers just peeping into day, as so many happy messengers come to proclaim the power and munificence of the Creator."

The scenes which science unfolds for our admiration are not confined to earth. What must have been the emotions of Galileo, when with his telescope (an old organ pipe with lenses in the ends) turned towards heaven, he discovered the crescent form of Venus, the rings of Saturn, the Satellites of Jupiter and their revolutions, which with other phenomena

confirmed beyond the possibility of doubt the Copernican theory of the Solar System? What though he was denounced as a heretic, and had sentence passed against him by the Holy Inquisition for teaching the damnable doctrine that the earth revolved around the sun and upon its own axis? The feelings of Newton, when he had solved the problem of the universe, may be imagined, but not described. And Franklin's, when he had elevated his kite, attached the key to its string, and received from it the electric spark upon his knuckle, thus proving the identity of lightning and electricity, what must have been the emotions of his noble and generous mind? for he saw at once how the lives and property of his fellow-men might be protected from the terrific thunderbolt.

Indeed, whether we contemplate Nature as she exhibits herself in the Universe of worlds, preserving order and harmony, not only in our own system, but in the infinitude of systems that fill the immensity of space; or view her in the more humble but not less perfect objects with which she has garnished our earth; we cannot but be filled with feelings of wonder and delight; wonder, that the Great Creator should have made such an extensive display of his power and majesty; and delight, that he has qualified man in such a high degree to investigate and comprehend his wonderful works.

THE BIBLE.

"Within this awful volume lies
The mystery of mysteries.
O! happiest they of human race,
To whom our God has given grace
To hear, to read, to fear, to pray,
To lift the latch, and force the way;
But better had they ne'er been born,
Who read to doubt, or read to scorn."

LUTHER said, "Whom God would destroy, he permits to trifle with Scripture." Indeed, such things very dreadfully harden the heart. A good practical writer says:

"It is of the greatest importance that we should resist the temptation, frequently so strong, of annexing a familiar or irreverent idea to a scriptural usage, a scriptural expression, a scriptural text, or a scriptural name. Nor should we hold ourselves guiltless, though we have been misled by mere negligence. Every person of good taste will avoid reading a parody of a beautiful poem, because the recollection of the degraded likeness will always obtrude itself upon our memories, when we wish to derive pleasure from the contemplation of the elegance of the original. But how much more urgent is the duty by which we are bound to keep the pages of the Bible clear of any impression tending to diminish the blessing of habitual respect and reverence to our Maker's law."

Sir Horace Vere, on being asked by the Marquis Spinola, a celebrated general, the cause of his brother's death, is said to have replied, "He died, sir, of having nothing to do." "Alas!" said the Marquis, "that is cause enough to kill any general of us all."



Interior of a Pianoforte Factory.

A DAY AT A PIANOFORTE FACTORY.

A HUNDRED and twenty years ago, Dr. Arne, then a stripling, who, like many other striplings, loved music much better than the study of the law, used to delight in practising by stealth after the family had retired to rest. He had in his bed-room an old *spinet*, from which, after muffling the strings to deaden the sound, he drew such tones as it could afford, and which have been described as "weak, wiry tones, between a cough and a chirp, elicited by keys rattling like the dry bones of a skeleton."

If Arne, or any one who, like Arne, had been accustomed to the clavichords, the virginals, the spinets, and the harpsichords of past ages, could see a pianoforte of modern times, how great would be the change perceived! All these instruments, together with the psalter, or dulcimer, act on the same principle, a principle which marks a separation between them and the violin on the one part, and the lute, the harp, and the guitar, on the other. This principle is the striking of a stretched cord, to produce from it the tone due to its length, thickness, and tension; yet though fundamentally the same, how different in effect are these several instruments! The modes in which the principle is modified in the several forms of instruments are curious, and may thus be briefly glanced at. The ancient *psalter* (nearly the same instrument as the modern *dulcimer* occasionally seen in our streets) was probably the original whence all the others have emanated; and, according to Mr.

Hogarth, "consisted of a square box of small depth, over which was placed a sounding-board of fir, and on this sounding-board were stretched a set of strings of steel and brass, tuned to the notes of the scale." They were struck or played upon by two little rods held in the hands of the player. A great change was effected when the little rods were abandoned, and mechanism introduced, whereby each string was provided with a lever which struck it. The lever constitutes the key of such instruments as this, and, in the form of an instrument called the *clavichord*, was provided at the hinder end with a little brass wedge that struck the string when the front end of the key was pressed down. To improve the tone elicited from the string, the brass wedge was superseded by a quill, and the instrument then acquired the names of the *virginal* and the *spinet*. As a still further improvement, it was proposed to have two strings to every note, so as to increase the volume of sound: this involved a considerable increase in the complexity of the mechanism, and the improved instrument, under the name of the *harpsichord*, was in high repute during the greater part of the last century. At length occurred the happy thought of dispensing with the quills, and using little wooden hammers covered with leather, as a means of eliciting the tones of the strings, a modification which gave rise to the modern *pianoforte*, so named from the power of the instrument in producing "piano" and "forte," or loud and soft effects.

Whether we rank it as an article of furniture or

as a luxury, it is certain that the pianoforte has become diffused in an extraordinary degree in this country. Those who can carry their recollection back over a period of thirty or forty years, will remember the pianoforte as an instrument for the wealthy, sparingly seen in the houses of the middle classes; they will remember the gradual steps by which it has reached the domestic firesides of the bulk of the class just alluded to; and they will be prepared to expect that such an extension in the use must have brought along with it extensive plans of improvement, and equally extensive manufacturing arrangements: yet there are probably few, even of those who are familiar with the use of the pianoforte, who are aware of the complex mechanism of the modern instruments, or of the gigantic scale on which the manufacture is conducted. On these points we shall endeavor to offer a few words of information.

Whatever form or value the pianoforte may have, it consists of a case containing stretched wires, which wires are struck by soft hammers, attached to the hindmost end of the finger-keys. This being the general character of the instrument, the various subdivisions are as follows. It was stated in a former paragraph that the harpsichord was an improvement on previous instruments, by having two strings to every note: this improvement has been retained in the pianoforte, together with the later one of having soft hammers instead of quills. The "tinkling grandfather of the pianoforte," as the clavichord has been called, had but four or five octaves; the harpsichord five or five and a half; but the pianoforte has extended its range to six and a half. These points being remembered, then, we may state, 1st, that the square pianoforte has the strings horizontal, in a rectangular case, with two strings to each note, and a compass varying from five and a half to six and a half octaves. 2d. The cottage pianoforte has its strings arranged vertically, reaching nearly from the ground to a short distance above the level of the keys: the case is much shorter than in the "square;" there are two strings to each note; and the compass is generally six octaves. 3d. The cabinet pianoforte is much higher than any other, except the upright grand, a form not now manufactured; the strings, two to each note, are ranged vertically, but, unlike those in the cottage form, are elevated wholly above the level of the keys: in general the compass is six octaves, but the most finished instruments have a compass of six and a half. 4th. The grand pianoforte is longer than any other; it is wider at one end than the other, and, unlike those hitherto mentioned, has the keys at one end; the strings are horizontal, and the chief feature whereby the instrument is distinguished is, that there are three strings to each note; the compass is always six octaves and a half, and there are thus upwards of two hundred and twenty strings. 5th. The semi-grand pianoforte is, as its name imports, a modification of the "grand;" it has the strings horizontal; its case somewhat resembles that of the "grand," but it is shorter, has a compass of only six octaves, and has but two strings to a note. These are the five forms of pianoforte now made; and the

manufacture of course involves certain modifications to suit the various forms.

The case, being a hollow box veneered on the outside, is made in a manner nearly similar to cabinet-work generally. In the "square" form it is an oblong rectangle; in the "cabinet" it is lofty; and in the other three forms it is modified in various ways. The most scrupulous care is taken in the selection of wood, not only in reference to its perfect dryness, but to the combining of two or three sorts together, so that each kind of wood may render its peculiar properties in aid of the others. Nearly all the workbenches at the factory are provided with a simple but valuable arrangement for pressing and keeping together the pieces of glued wood while drying. At a height of about four feet above the bench is a horizontal board or false ceiling; and the glued pieces being laid on the bench, a number of elastic wooden rods are placed nearly vertical between the false ceiling and the bench; being longer than the interval in which they are to be placed, they can only be adjusted by a slight bending or convexity in their length; and this bending gives them a very powerful pressure on the bench beneath or on the glued pieces placed on the bench. When the glueings are dry, a slight blow or jerk will remove each rod.

Without attending to the technical names applied to the various parts of a pianoforte, we shall, perhaps, be understood by general readers when we speak of the *frame-work* of the instrument as distinct from the mere outer case. If we open a pianoforte, especially a "grand," we shall see bars and rods and strengtheners of various kinds, placed in different directions, not only with a view to give form and stability to the instrument, but to resist the powerful strain to which it is exposed by the tension of the strings. This tension is truly extraordinary, and requires for its due appreciation a little consideration of the phenomena of a stretched string or wire. Let us suppose that a wire is wound round two pegs or pins placed a yard apart, and that it is merely brought into a straight line without any attempt at stretching it. If struck with a soft hammer, it will yield a low sound, due to a small number of vibrations per second; but if we wish to elevate the pitch of the tone, we can do so by increasing the tension or stiffness of the wire. A tuning-key being placed on one of the pegs to which the wire is attached, the peg can be turned round, and a portion of the wire wound on it; this necessarily increases the tension of the portion of wire extending between the pegs; the increase of tension increases the rapidity of vibration when the wire is struck, and this increased rapidity gives a more elevated pitch to the tone elicited. Now, in conformity with one of the laws of force, the wire pulls with a power equal to that by which it has been stretched; it tends to regain the state which it originally had, and by this tendency exerts a powerful dragging or pulling force on the pins to which its two ends are attached, and on the frame-work wherein the pins are inserted. This force is exerted by every wire, according to the tension given to it; and the aggregate force is surprisingly great. It is calculated that the two hundred

and twenty-five strings or wires of a grand pianoforte exert a strain of more than twenty thousand pounds! This is in fact the force tending to draw together the two ends of the frame-work to which the wires are attached. It need hardly be observed, therefore, that the frame-work must be made with great strength. The various pieces of wood are in many places glued up so that the grain of one component part shall extend in one direction, and that of the other at right angles to it; different kinds of wood are used in different parts; an iron rod is placed here, an iron plate there; and contrivances of various kinds are introduced to give most strength where most strain will be experienced. The "action" of a pianoforte (of which we shall presently speak) is, perhaps, more complicated in a "cabinet" than in any other form; but the mechanism connected with the strings is far more complex in the "grand."

The mere attachment of each wire to pegs at its two ends is not sufficient for the adjustment of its tone. The whole length of wire is not allowed to vibrate when struck, but only a given length of it from one end to a pin inserted in a curved piece of wood. The adjustment of these vibrating lengths to the different strings is a matter of great delicacy, and may perhaps be rendered comprehensible by the few following remarks. There are three modes of producing an elevation of pitch in a vibrating string: 1st, by shortening the string; 2d, by increasing its thickness; or 3d, by increasing its tension. Now the manufacturer does not adopt any one of these methods of adjusting tones, to the exclusion of the others: he avails himself of all. Twelve strings of the same length and thickness might be so different in tension as to yield the twelve semitones of an octave; twelve strings of the same thickness and tension might be of such different lengths as to yield the twelve semitones; or, lastly, twelve strings of the same length and tension might be made to produce these effects by having the thicknesses different. But in practice the tones produced by either of these methods would be very defective in character. Each degree of thickness, of length, and of tension, produces its own peculiar effects on the "*timbre*," or quality of tone. If two strings of the same length and thickness were so stretched as to produce tones differing by an octave in pitch, one would be strained nearly to breaking, and the other would produce a dull, weak, and smothered sound. If, while producing these two notes, the strings differed only in length or in thickness, the qualities of tone would not be so much at variance as in the case just supposed; but still the required equable character of tone would not be produced. The plan adopted, therefore, is, to let the length, the thickness, and the tension, all vary together.

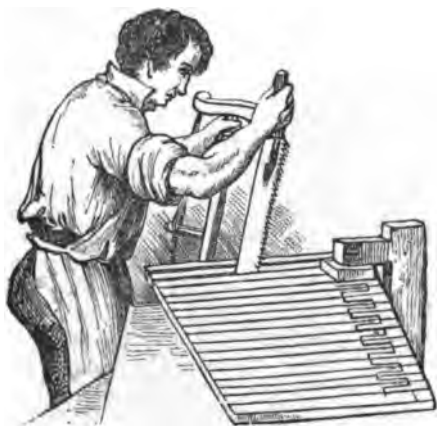
This explanation will enable us to understand the reason for the observed difference in the strings of the pianoforte. We perceive that the strings for the upper notes are not only shorter but also thinner than those for the lower; and we should find, though it is not perceptible to the eye, that the tension is likewise different. The thickness, the length, and the tension, all diminish (but not uniformly), from the

lower to the upper notes; *tension* being here used to express the force employed in stretching the string to the required degree. In a grand pianoforte there are fourteen different thicknesses of wire; the smaller, for the upper notes, being plain polished steel-wire, and the thicker, for the lower notes, being coated with a very fine coil of copper-wire.

In adjusting the strings there are certain rules as to the thickness of wire selected for a certain note; and the vibrating length of each string is regulated by a curved piece of wood called a bridge, fixed to the sounding-board of the instrument. To make and adjust this bridge is one of the most delicate operations of the "bellyman" or "sounding-board maker." The curve itself is regulated by a gauge to which the maker works: so is the position which it is made to occupy in the sounding-board; and so likewise are the order and arrangement of the pins inserted in it. These pins are so placed that the strings rest against them, each string being bent out of its rectilinear course by coming in contact with a pin. A portion of the string is thus effectively cut off, so far as regards the vibration; and the manufacturer is thus enabled, by the adjustment of the pins in the sounding-board, to give to the strings any vibrating length corresponding to the tones to be produced. So complex and important are these arrangements, that the strings of an improved grand pianoforte require nearly one thousand iron pins or pegs, each one inserted in a hole made with great exactness to its dimensions. The workmen called "stringers" fix the proper strings to the proper pins. The wire is sent from the wire-drawer in coils about five or six inches in diameter, each coil containing enough wire for several strings.

Hitherto we have said nothing of the mechanism by which the strings are struck,—by far the most curious part of a pianoforte. This mechanism obtains the general name of the "action;" and when we hear of "square-action," "grand-action," &c., we must understand these terms to allude to the particular mode in which the percussion is effected. It is perhaps scarcely too much to say that three-fourths of the improvements which the pianoforte has undergone during the present century have had relation to the "action."

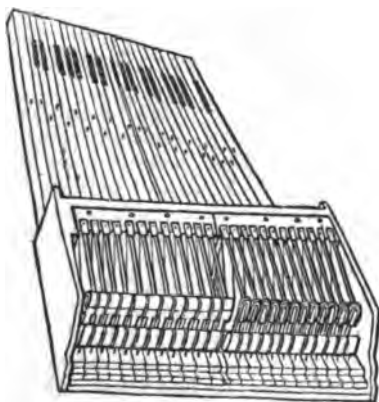
The most obvious part of the "action" is the key-board and its mechanism. Every ebony or ivory key is a lever, which, when pressed down at the foremost end, rises at the hindmost, and this leverage is the source of all the effects subsequently produced. A little examination of these keys will show that the ebony is solid, but that the ivory is merely a veneer or scale put on a substratum of wood. The white keys are made of carefully prepared lime-tree wood, which is cut after the pieces of ivory are attached. The annexed cut shows the appearance of the key-board while being cut up into keys. The pieces of ivory are shaped and prepared by the ivory-worker to the exact size for each key, and are glued side by side on the surface of the wood. The wood is marked out by a gauge, and is then cut up into parallel pieces for the keys, by means of a slight frame-saw. A notch is made in the stem or shaft of every white



Key-cutter at work.

key to receive the ebony key and its stem. When all the keys are cut, a little piece of mechanism is placed in one particular part of the length of each, to form a fulcrum.

To the hindmost part of each key is attached the mechanism whereby it is made to act upon the string; and this mechanism, to which the name of the "action" is more particularly applied, presents a complexity of arrangement that will baffle everything like a popular description. Simple as the "square" pianoforte is when compared with the other forms, yet the following cut will show that the "action" attached to each key is anything but simple. This cut represents a "square treble-action," that is, such a portion of the keys and connected mechanism as belong to about an octave and a half of the "treble" or upper part of the instrument. This piece of mechanism is represented as viewed from behind, the most favorable position for displaying the intricacies of the "action." It is seen that there are a number of small pieces placed at various angles, and acting upon one another by various species of leverage.



Treble-action of Square Pianoforte.

But this "action" dwindles into insignificance when compared to that of a cabinet pianoforte in its most improved form. We know of nothing, except the mechanism of a watch, to rival the latter in in-

tricate combinations. One part of the mechanism attached to each key is to cause the hammer to strike on the string; another is to regulate the degree of strength or softness with which the blow is struck; a third is to prevent the rebound of the hammer after the blow; and others are to produce modifications of effect so minute that nothing but the most refined skill in pianoforte playing could render them either appreciable or necessary: indeed, the advance of the manufacture, and the advance of the players in skill, reciprocally measure each other; for while on the one hand the resources of the instrument were never thoroughly known until a Liszt, a Thalberg, a Herz, or a Moscheles developed them; so on the other hand these great players would never have been able to produce the exquisite effects for which they are so celebrated, unless the manufacturers had made important and repeated advancements in the progress of the instrument toward perfection.

At the end of this article is given a wood-cut to illustrate the general appearance which the "action" of an improved cabinet pianoforte presents before the silken covering is applied. Yet this "action," complex as it appears, can give but a faint idea of the minute details involved in the mechanism. Nearly the whole of the long slender rods, the levers, &c., here seen have nothing to do with the striking of the strings; they relate merely to the production of some of those delicate effects, those minute shades of tone, which are not sought for in the average style of instruments. The mechanism here seen forms the "front action;" and on this being removed, another series, still more complex than this, is displayed; and on the removal of this latter, which is the "action" properly so called, we see the strings themselves, the percussion of which is the object of all this intricate assemblage.

We have thought that the matter now under consideration could not be better illustrated, for general readers, than by ascertaining the number of separate pieces concerned in this mechanism. In one of the six and a half octave pianofortes of Messrs. Broadwood of London, (for which, we believe, a patent has been taken out,) the mechanism connected with the "action" consists of about *three thousand eight hundred* separate pieces of ivory, ebony, cedar, sycamore, lime-tree, mahogany, beef-wood, oak, pine, steel, iron, brass, lead, cloth, felt, leather, and vellum. Every one of these has to be fashioned with the most scrupulous exactness, and as scrupulously adjusted to its place. Many of the pieces are not more than a quarter of an inch square, some even less. The qualities of all the varieties of wood are closely studied, in order to determine their particular aptitude for the different parts, and it is thus that so many as seven or eight kinds are used in the "action" alone. One kind is preferred because slender rods made of it will not warp; another kind because the grain is straight; a third because it is hard and smooth; a fourth because it is soft and smooth; and so on. Some of the rods are as much as three feet long and only a sixth or seventh of an inch in thickness. To give the technical terms applied to all these little pieces would be of no use; for after

saying that the key acts on the "grasshopper," and the "grasshopper" on the "under-hammer," and the "under-hammer" on the "sticker," and the "sticker" on the "hammer," and the "hammer" on the string, we have done but little towards explaining the particular construction and action of each.

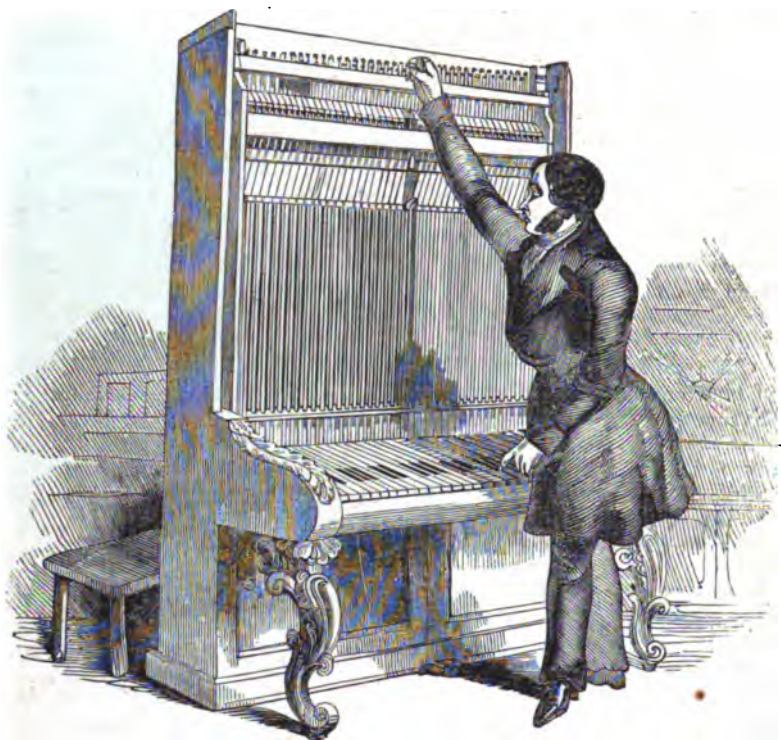
When we say that all these minute pieces are fashioned and adjusted by hand, it will be readily conceived that an important part of the arrangements of the factory has reference to them. Some of the workmen are entirely occupied in "key-making," who prepare the lime-tree of which the body of the key is made, glue on the pieces of ivory, cut the keys to their required widths, arrange the little pin or fulcrum, &c. Other workmen make the slender cylindrical rods of pine or of pencil cedar. Some are forming the "hammers," others the "under-hammers," the "dampers," the "grasshoppers," &c. An important and very curious part of the labor is the adjustment of the little pieces of vellum, cloth, felt, and leather. Vellum is used for the hinges of some of the minute parts; the two ends or edges of the vellum being glued into slits in the two pieces which are to be hinged together; and it thus forms a hinge peculiarly delicate in its action. The little pieces of cloth are used in various ways for subduing the rattling sound which pieces of mechanism would be apt to produce, and which would interfere with the tones of the instrument. To such a degree of refinement is this carried, that small holes not above a twelfth or fifteenth of an inch in diameter are lined with cloth, in order to give a smoothness to the motion of a wire which passes through the hole. The felt and the leather are principally employed as coverings for the hammers and dampers which come in contact with the wires, and which are thus covered to give mellowness to the tone. If a stretched wire be struck by a piece of wood or of metal, two sounds are heard; one due to the vibration of the wire itself, and the other to the blow which the striking substance gives: to get rid of this latter sound is the object of leathering and felting the hammers.

In speaking of the strings for the various forms of pianoforte we stated that the "grand" has three strings to each note; and that each of the other four forms has two. The adjustment of all these strings is an important matter, and devolves upon the "regulators" and "tuners." It will of course be understood that in such a case the two or three strings belonging to one note must be tuned in unison; and to effect this, the strings are, as may be supposed, of equal lengths and thicknesses. The object then is to bring them to an equal degree of tension, by which the tones may be of the same pitch. The persons employed at this avocation are such as are able, from accuracy of ear, to determine musical intervals with much precision. In our concluding cut the "cabinet" pianoforte is represented as undergoing the process of tuning. We may here remark that the "regulation" involves something more than the determination of the musical intervals between the several tones: it relates also to the easy and proper action of the keys, and the general fitness of all the parts for the office which they are to serve.

A portion of pianoforte mechanism to which we have not yet alluded is that connected with the *pedals*, resembling all the other portions in the high degree of care necessary in the manufacture. These pedals serve two totally distinct offices, one of which relates to all kinds of pianofortes, and the other to those only which are provided with three strings to every note. The first governs the "dampers," and their use may be thus explained. In order that the harmonies in a piece of music may produce their due effect, it is necessary that the preceding notes should not continue to sound long after the keys have been struck, else discord may usurp the place of harmony. For instance, if the note *c* were sounded, and the next note of the piece of music were *d*, the continued sounding of the *c* after the *d* has been struck would give the discordant interval of a 2d, which the ear can not tolerate, except as a foil to more perfect intervals. Hence mechanism is provided, whereby a soft hammer or "damper" is made to fall on the vibrating string the moment the finger is removed from the key, and this damping smother the note by stopping the vibrations. As, however, it is desirable in some pieces of music to have the full effect of the vibrating strings after the fingers are removed from the keys, the player is enabled, by pressing his foot on a pedal, to remove all the "dampers" from the strings, with which they do not again come in contact until the pedal is released. In some of the older square pianofortes this adjustment is made by means of a handle situated near the left hand of the player; but we believe that in all the modern instruments a pedal affords the requisite leverage. The other kind of pedal, used only in grand pianofortes, is employed for the purpose of removing one out of every three strings from the action of the hammers. If three strings were struck by every hammer every time that the key belonging to that hammer is played upon, the player could not obtain the *piano* passages which add so much to the grace and effect of music. There is, therefore, a provision for lessening the quantity of



Fret-cutter at work.



The "Action" or Internal Mechanism of a Cabinet Pianoforte.

sound—for such is in reality the operation—by lessening the number of strings struck by each hammer. This is effected by shifting the entire key-board to a small distance from its usual position, whereby each hammer clears one of the three strings, and only strikes the other two. The foot-pedal effects this shifting by intermediate levers, and the player has thus the whole arrangement within his power.

Among the minor operations in the manufacture is the preparation of fret-work or open-cut boards for the front of some kinds of pianofortes. This is effected in a very quick and elegant way. The device being marked on the board with chalk, the board is fixed vertically in a kind of vice, and, as represented in the annexed cut, is sawn by means of an extremely fine and thin saw, which follows all the turnings and windings of the chalk-marks, penetrating to every angle, however acute, and severing the small pieces, the absence of which constitutes the pattern. The other ornamental features we must dismiss without any particular notice, as involving no principle but that which distinguishes common cabinet-work.

ALFRED THE GREAT.

BY COBBET.

THE tomb of Alfred was in an Abbey, at Winchester, founded by that king himself. The Abbey and its estates were given by the tyrant to Wrigthesley, who was afterward made Earl of Southampton, and who got a pretty good share of the con-

fiscations in Hampshire. One almost sickens at the thought of a man capable of a deed like the destruction of this Abbey. Where is there one amongst us, who has read anything at all, who has not read of the fame of Alfred? What book can we open, even for a boyish days, that does not sound his praise? Poets, moralists, divines, historians, philosophers, lawyers, legislators, not only of our own country, but of all Europe, have cited him, and still cite him, as a model of virtue, piety, wisdom, valor, and patriotism, as possessing every excellence, without a single fault. He, in spite of difficulties such as no other human being on record ever encountered, cleared his harassed and half barbarized country of horde after horde of cruel invaders, who, at one time, had wholly subdued it, and compelled him, in order to escape destruction, to resort to the habit and the life of a herdsman. From this state of depression he, during a not long life, raised himself and his people to the highest point of happiness and fame. He fought, with his armies and fleets, more than fifty battles against the enemies of England. He taught his people, by his example as well as by his precepts, to be sober, industrious, brave, and just. He promoted learning in all the sciences; he planted the University of Oxford; to him, and not to a late Scotch lawyer, belong "*Trial by Jury*;" Blackstone calls him the founder of the Common Law; the *counties*, the *hundreds*, the *tithings*, the *courts of justice*, were the work of Alfred; he, in fact, was the founder of all those rights, liberties, and laws, which made England to be what England has been, which gave her a character above that of other nations, which

made her rich, and great, and happy, beyond all her neighbors, and which still gave her whatever she possesses of that pre-eminence. If there be a name under heaven to which Englishmen ought to bow with reverence approaching toward adoration, it is the name of Alfred. And we are not unjust and ungrateful in this respect, at any rate; for where is there an Englishman to be found who would not gladly make a pilgrimage of a thousand miles to take off his hat at the tomb of this maker of the English name? Alas! that tomb is nowhere to be found. The barbarians spared not even that. It was in the Abbey before mentioned, called Hyde Abbey, which had been founded by Alfred himself, and intended as the place of his burial. Besides the remains of Alfred, this Abbey contained those of St. Grimbald, the Benedictine monk, whom Alfred brought into England to begin the teaching at Oxford. But what cared the plunderers for remains of public benefactors? The Abbey was knocked down, or blown up, the tombs were demolished, the very lead of the coffins was sold; and, which fills one with more indignation than all the rest, the estates were so disposed of as to make the loanmakers, the Barings, at this day the successors of Alfred the Great!

SEASONABLE SUGGESTIONS.

THE changes of the season are typical of the gradations and stages of human life. The springtide

"Puts forth the tender leaves of hope,"

when the pulses of playful childhood leap free and uncontaminated in the young veins, and the mind is fresh and vigorous and tenacious of impressions. Then is the period to inculcate lessons of virtue and patriotism and truth, which are to form character, and lead to usefulness in the walks of life. Parents and guardians should keep most careful watch, and implant those seeds in the young bosom, whose fruits would not only be pleasant to the sight and agreeable to the taste, but of the tree of life eternal. In the proverbs of Solomon, we have been struck with none more forcibly than that which says: "with all thy gettings, get understanding." This does not refer exclusively to the knowledge which is to be derived from books or from an intercourse with our fellow men, or from travel and observation. It contemplates not only the mysteries of creation, the universality of the Mighty Architect at whose bidding, worlds were wheeled from chaos into concerted action, but the latent intelligence and capabilities of the human heart, and the connexion between its promptings and emotions and the great Will by whose authority it is moved.

Youth is the seed-time, when the character should be formed and moulded, and the earlier the lessons of wisdom and truth are inculcated, the more lasting will be the impression, and difficult to be erased. We do not advocate sternness and rigor in imparting these lessons to the young mind. Piety and morality, and a reverence for the Supreme, do not consist in a gravity of demeanor, or rigidity of mien, or an excessive show of sanctity, any more than

humility and an absence of all pride and vanity are surely marked by the sober gray or drab color and the plain cut of the quaker's coat. There is nothing austere or severe in that morality which is founded on virtuous action,—nothing forbidding in its aspect, but rather courting and holding out inducements to the young, then repressing or alarming to their quick sensibilities.

Then, while yet the heart is young, and fresh, and glowing—a very paradise in which the serpent has not been yet warmed into life—though flowers are blooming of the brightest hues, and golden fruits in clusters hang, implant the principles which are to guide in after life. Teach the heart to be pure in its conceptions, virtuous in its actions, firm in its resolves. Teach it to discard the promptings of sordid avarice and mean ambition. Point to noble examples, and cultivate generous emotions. Let it not deceive itself; for how can it be fair, and candid, and honest to others, if it practice treachery to itself?

Summer marks manhood when the character is developed, and the responsibilities and cares of life are begun to be assumed. The student applies his stores of knowledge to the pursuit he may have adopted,—the past apprentice thinks of setting up a shop of his own, or at least secures the wages of his handicraft—and the dangerous voyage of life in reality begins. The helmsman makes his first venture at the wheel.

Autumn comes, and the voyager is homeward bound. He returns from his venture with a priceless argosie, or but the battered hulk, overgrown with seaweed and barnacles, is blown or drifted back. Some are invested with all the glorious garniture of Fall, while others, like trees that shed their leaves early, stand stark and bare, amid companions dressed out in emerald as well as golden sheen. Accumulated wealth and honors cluster like bacchanal grapes around the brows of some, while poverty, bitter, gnawing, soul-wearing penury, presses upon others. We do not say that they are the artificers of their own fates, but to them how grateful, whether in affluence or indigence, the feeling that their lives have been guided by correct principle and sterling integrity. Fortune does not always favor honest industry, but, in nine cases out of ten, honesty and industry, with a little care, will always secure a maintenance, and what is better, content.

Last comes the winter, when the tenant gives up the old lease and renews his bond with his landlord. The term has expired and he must remove from his late tenement—for better or for worse, according to the account he can give of his stewardship. How potent is the argument in favor of a life of morality, integrity, and virtue! With what confidence the good man resigns his covenant! Little fears he but the change will be for the better. Mark the contrast! Yon squalid wretch, whose trembling limbs and enervated frame—whose bloated cheeks and bleared vision—denote a life of debauchery and drunkenness, of rioting and sin, grasps, with all his spent energy, the contract whose expiration is being recorded. Doubt has given way to fear, and that in turn is fast yielding to despair.

HINTS FOR STUDENTS.

WE extract the following from a well-known work—*Buck's Anecdotes*: He who would wish to make proficiency in any science, must give himself to study. Knowledge is not to be gained by wishing, nor acquired by indolence and wealth. Application is necessary both for prince and peasant. Many in elevated situations are very desirous of the honor, but averse to the labor, of intellectual attainments.

Euclid was asked one day by King Ptolemæus Lagus, "whether there was not a shorter and easier way to the knowledge of geometry than that which he had laid down in his *Elements*." He answered, that "there was indeed no royal road to geometry." In the same manner, when Alexander wanted to learn geometry by some easier and shorter method, he was told by his preceptor that "he must here be content to travel the same road with others, for that all things of this nature were equally difficult to prince and people." We may apply this observation to learning in general. If we wish to enjoy the sweets, we must encounter the difficulties, of acquisition. The student must not be always in the world, or living at his ease, if he wish to enlarge his mind, inform his judgment, or improve his powers. He must read, think, compare, and digest, in order to be wise and useful.

In respect to study, there are some necessary precautions to be attended to, both as to the body and the mind. Hence a minister of the gospel used to give this advice to young students: 1, that they should not buy too many books, as that would hurt their pockets; 2, that they should not engage in any sensual pursuits, as that would hurt the mind; and 3, that they should not sit up late at night, as that would injure their health.

Dr. Whitaker gave the following three rules to a student: 1, to study always standing; 2, never to study in a window; 3, never to go to bed with his feet cold.

Night studies are very prejudicial to the constitution and ought to be avoided by all who wish to prolong their lives, and to be useful. However fond of study, therefore, let the student pay some attention to health. It is said of Euripides, the tragedian, that he used to retire to a dark cavern to compose his tragedies; and of Demosthenes, the Grecian orator, that he chose a place for study where nothing could be heard or seen; but, with all deference to such venerable names, we can not help condemning their taste. A man may surely think to as good purpose in an elegant apartment as in a cave, and may have as happy conceptions where the all-cheering rays of the sun render the air wholesome, as in places where they never enter.

Charles V., during his celebrated solitude, sometimes cultivated the plants in his garden with his own hands, and sometimes rode out in the neighborhood, and often relieved his mind in forming curious works of mechanism. Descartes spent the afternoon in the conversation of his friends, and in the cultivation of a small garden. After having in the morning settled the place of a planet, in the evening

he would amuse himself with watering a flower. Barclay, in his leisure hours, was a florist. Balzac amused himself with making pastils. Pecresc found his amusement among his medals and antiquarian curiosities. Rohault wandered from shop to shop to observe the mechanics labor. Cardinal de Richelieu, among all his great occupations, found a recreation in violent exercise, such as jumping, &c. It is said of the very laborious Mr. Poole, that his common rule was, while he was engaged in writing his famous *Synopsis*, to rise about three or four o'clock in the morning, and continue his studies till the afternoon was pretty far advanced, when he went abroad, and spent the evening at some friend's house in cheerful conversation.

DEW.

THE dew, celebrated through all times and in every tongue for its sweet influence, presents the most beautiful and striking illustration of the agency of water in the economy of nature, and exhibits one of those wise and bountiful adaptations, by which the whole system of things, animate and inanimate, is fitted and bound together. All bodies on the surface of the earth radiate, or throw out rays of heat, in straight lines—every warmer body to every colder; and the entire surface is itself continually sending rays upward through the clear air into free space. Thus on the earth's surface all bodies strive, as it were, after an equal temperature (an equilibrium of heat), while the surface as a whole tends gradually toward a cooler state. But while the sun shines, this cooling will not take place, for the earth then receives in general more heat than it gives off; and if the clear sky be shut out by a canopy of clouds, these will arrest and again throw back a portion of the heat, and prevent it from being so speedily dissipated. At night, then, when the sun is absent, the earth will cool the most; on clear nights, also, more than when it is cloudy; and when clouds only partially obscure the sky, those parts will become coolest which look toward the clearest portions of the heavens. Now, when the surface cools, the air in contact with it must cool also; and like the warm currents on the mountain side, must forsake a portion of the watery vapor it has hitherto retained. This water, like the floating mist on the hills, descends in particles almost infinitely minute. These particles collect on every leaflet, and suspend themselves from every blade of grass, in drops of "pearly dew." And mark here a beautiful adaptation. Different substances are endowed with the property of radiating their heat, and of thus becoming cool with different degrees of rapidity; and those substances which in the air become cool first, also attract first and most abundantly the particles of falling dew. Thus, in the cool of a summer's evening, the grass plot is wet while the gravel walk is dry; and the thirsty pasture and every green leaf are drinking in the descending moisture, while the naked land and the barren highway are still unconscious of its fall.



PETRARCH, as crowned at Rome, from a painting by Jofanelli. Avignon, with the old Roman Bridge, and Vaucluse, from lithographs by Lemercier. Tomb at Arqua, from a print by Turner.

LOCAL MEMORIES OF GREAT MEN.

PETRARCH.

DURING one of the journeys of this great poet, after he had achieved the reputation which still makes his memory so deservedly dear to his countrymen, he passed through Arezzo, the place of his birth. At his departure, the principal persons of the town waited upon him to pay their respects, and to point out the house in which he had first breathed. "It

was a small house," says Petrarch, "befitting an exile, as my father was." He was informed that the owners had been about to make some alterations in it; but the authorities interfered, and caused the whole to be preserved as it was on the circumstance which had given to Arezzo its chief claim to the agreeable remembrances of posterity. That event occurred in the night of the 19th of July, 1304; and was attended by two memorable incidents. His mother was in imminent danger of her life in giving birth to him, and his father Petracco who had been

banished from Florence with Dante and other eminent men, was almost at the same hour engaged with his party (one of the two factions, the blacks and the whites, or, as they called themselves, the Neri and the Bianchi,* into which the Florentines were divided) in an unsuccessful attack upon their native city. The troubled circumstances that thus surrounded the earliest years of Petrarch, were but types of the wretched state of things he was to witness through his entire life in connexion with his beloved country, torn from one end to the other by factions and families. After the defeat of the white party, to which Petrarch belonged, he was obliged to sever himself from his wife and child; he wandering about from place to place, doing as he best could, and his wife and infant son, to whom the sentence of banishment did not extend, removing to a small property the family possessed at Ancisa near Florence. In their way they crossed the Arno; and the guide, a robust peasant, carried the child hung in a swaddling-cloth over his shoulder. While they were in the deep part of the river, the guide's horse fell; and amid his own and the mother's frantic efforts to raise it, the whole party had nearly perished. After seven years spent in this unhappy way, Petrarch took his family to Pisa; and thence, in 1313, to Avignon, when once more the young poet's history had been well nigh brought to a summary conclusion by the threatened shipwreck of their vessel off Marseilles. One of the earliest indications of the future tastes and genius of Petrarch may perhaps be found in his remark, when taken to see the lovely landscape around the fountain of Vaucluse, a few leagues from Avignon. "There now," he cried rapturously, "is a retirement suited to my taste, and preferable in my eyes to the greatest and most splendid cities." Of the permanency of the impression Vaucluse made upon him, we shall find a sufficient testimony some twenty years later. At Avignon, then the seat of the luxurious papal court, Petrarch found everything too expensive for his reduced circumstances; so, in 1315, he removed to the small town of Carpentras. Here Petrarch learned grammar and logic from one Convennole de Prato, a man of meager attainments, but with sufficient intelligence to appreciate his pupil's character and abilities. Petrarch exhibited, long afterward, his gratitude for the kindness and respect with which he had been treated; when De Prato, being very old and very poor, received considerable assistance from the poet's scanty income. At the age of fifteen, Petrarch sent his son to Montpellier, and afterward to Bologna, to study the law; but, like several other poets similarly destined, young Petrarch found it much more delightful to seek and make acquaintance with the choicest passages in his favorite authors, than to busy himself in the subtleties of legal lore. Petrarch on one occasion came to Bologna, in the hope of checking his son's growing passion for literature. The latter, aware of his ap-

proach, hid his Virgil, Cicero, and such other few books as a student with small means could obtain before the introduction of printing; but Petrarch discovered the hidden treasures, and threw them upon the fire. His son's agony at the loss was however too much for the parental heart: Petrarch rescued Virgil and Cicero from their purgatory, and returning them to the poet, said, "Virgil will console you for the loss of your other manuscripts, and Cicero will prepare you for the study of the law." The death of both his parents in 1326, however, left his future career entirely at his own disposal. He and his brother now entered the church, having first settled the family affairs, which they found much disordered by the dishonesty of the executors. But Petrarch tells us, with great gratification, that, in their ignorance, they had left him what he esteemed as the most valuable part of his patrimony, a manuscript Cicero, highly prized by his father. He was now but twenty-two years old, when he settled with his brother in the licentious and profligate city of Avignon; and we need not therefore wonder that he did not pass through the temptations that there surrounded him with entire safety. His person, voice, and manner, were all of an unusually seductive character; and he was in no slight degree vain of them. "Do you remember," he writes to his brother (at a time when all such follies had passed away), "how much care we employed in the lure of dressing our persons? When we traversed the streets, with what attention did we not avoid every breath of wind which might discompose our air; and with what caution did we not prevent the least speck of dirt from soiling our garments." This attention to his person, at the same time, was not allowed to interfere with the great business of his life, the cultivation of his mind. He studied earnestly, and transcribed the works of every valuable writer that came in his way. Such was the only road to learning in those days. Petrarch's first compositions were in Latin; but he was wise enough to perceive early the advantages of writing in his native "vulgar tongue," as the Italian was then called. And certainly he found that tongue very different from the state in which he left it. The improvement Dante had commenced, Petrarch may be said to have almost finished: under his cultivation it acquired a new elegance and richness. Among the numerous friends and patrons which the manners, abilities, and general and increasing reputation for learning of the poet attracted, were John of Florence and James Colonna. The former was one of the pope's secretaries, and to him Petrarch intrusted all the anxieties caused by a sense of his own faults, by his desires to approve himself worthy of the vocation to which, in common with all other great men, he felt himself to be called, and by his keen sensibility to the distracted state of Italy; and, in return, he received such appropriate advice and sympathy, that he says he never left him without finding himself more calm and composed, and more animated for study. James Colonna was the third son of the nobleman of the same name, a member of one of the most ancient and illustrious families of the country. Petrarch, at the conclusion of an eloquent passage descriptive of his

* The Neri and Bianchi were the names of two branches of the Cancellieri family at Pistoia, who, on being expelled from that town, carried their feuds and their designations into Florence. Both, however, were Guelphs, although, from the Bianchi having subsequently joined the Guibelines, they have been sometimes confounded with them.

admirable qualities, says, "He gained the first place in my affections, which he ever afterward retained." We arrive now at that great event in the poet's personal history, which has certainly, by its romantic character and consequences, assisted in no slight degree to make Petrarch one of the most popular of writers.

Petrarch relates that exactly at the first hour of the 6th of April, he saw Laura, in the church of the monastery of St. Clair, at Avignon, where neither the sacredness of the place nor the solemnity of the day (Good Friday, probably) could prevent him from being smitten for life with human love. He saw a lady, a few years younger than himself, in a green mantle sprinkled with violets. "Her face, her air, her gait, were to him superhuman. Her person was delicate, her eyes were tender and sparkling, and her eyebrows black as ebony. Golden locks waved over her shoulders, whiter than snow, and the ringlets were interwoven by the fingers of love. . . . Nothing was so soft as her looks, so modest as her carriage, so touching as the sound of her voice. An air of gayety and tenderness breathed around her but so pure and happily tempered as to inspire every beholder with the sentiment of virtue, for she was chaste as the dewdrop of the morn. Such," says Petrarch, "was the amiable Laura." The most accurate writer the world has ever known, where the "facts" concern the human heart, has taught us, in his "Romeo and Juliet," what a first love may be in those delicious southern skies—sudden but permanent; and of this character was Petrarch's unhappy attachment. Laura was already the wife of another. In our own country and time we should justly attach something criminal to the love that not only survived a discovery of that nature, but gloried in proclaiming its existence: it would, however, be wrong to measure Petrarch by such a standard. The customs of Italy, as well as the license generally allowed to poets, justified him in offering and Laura in accepting his respectful attentions and admiration; and whatever pain the acquaintance brought to either, it was not embittered by remorse. On one occasion, Petrarch appearing to presume upon Laura's favor too far, she said to him, with a tone and manner of extreme severity, "I am not what you take me for."

Petrarch's passion, however, continuing not merely unabated from the hour of their first meeting, but growing in intensity, he sought more than once to relieve his mind by travel; but, as his biographer happily observes, he always returned, "like the moth to the candle" that consumed him. In 1336, he went to that beautiful valley which had never ceased to haunt his mind with the remembrance of its loveliness from the hour when, as a boy, he first saw it, and there bought a little cottage and an adjoining field. Vaucluse, or Vallis Clusa (the shut-up valley), is watered by the windings of the river Sorgne, along one side of which extend verdant plains, and along the other corn-fields and vineyards. It terminates in a stupendous semicircle of rocks, rising perpendicularly upward, and having at the foot of one of them an immense cavern. Within this rises the Sorgne. Petrarch has himself given us a most in-

teresting account of his modes of life here, and of some of the principal features of the place. "Here," he says, "I make war upon my senses, and treat them as my enemies. My eyes, which have drawn me into a thousand difficulties, see no longer either gold, or precious stones, or ivory, or purple: they behold nothing save the water, the firmament, and the rocks. The only female who comes within their sight is a swarthy old woman, dry and parched as the Libyan deserts. My ears are no longer courted by those harmonious instruments and voices which have so often transported my soul: they hear nothing but the lowing of cattle, the bleating of sheep, the warbling of birds, and the murmurs of the river. I keep silence from morn till night. There is no one to converse with; for the good people employed in spreading their nets, or tending their vines and orchards, are no great adepts at conversation. I often content myself with the brown bread of the fisherman, and even eat it with pleasure. Nay, I almost prefer it to white bread. . . . But still I have my luxuries—figs, raisins, nuts, and almonds. I am fond of the fish with which this stream abounds, and I sometimes amuse myself with spreading the nets. As to my dress, there is an entire change; you would take me for a laborer or a shepherd. My mansion resembles that of Cato or Fabricius. My whole house-establishment consists of myself, my old fisherman and his wife, and a dog. My fisherman's cottage is contiguous to mine; when I want him, I call; when I no longer need him, he returns to his cottage. . . . One of these two gardens (made by himself) is shady, formed for contemplation, and sacred to Apollo. It overhangs the source of the river, and is terminated by rocks and by places accessible only to birds. The other is nearer my cottage, of an aspect less severe, and devoted to Bacchus; and, what is extremely singular, it is in the midst of a rapid river. The approach to it is over a bridge of rocks, and there is a natural grotto under the rocks, which gives them the appearance of a mystic bridge. Into this grotto the rays of the sun never penetrate. . . . Hither I retreat during the noontide hours; my mornings are engaged upon the hills, or in the garden sacred to Apollo." In this wildly-beautiful solitude, Petrarch meditated or wrote his most important compositions; among others his gigantic undertaking, the "History of Rome," from Romulus down to Vespasian, which he did not live to finish.

In spite of the closeness of his literary application, he was too near to Avignon, and the solitude was too complete to allow him to forget Laura. He met her one day in the streets of the former place, when she said unto him, "Petrarch, you are tired of loving me." This incident produced the following sonnet:—

"Tired, did you say, of loving you? Oh, no!
I ne'er shall tire of the unwearying flame
But I am weary, kind and cruel dame,
With tears that uselessly and ceaseless flow.
Scorning myself, and scorned by you, I long
For death: but let no gravestone hold in show
Our names conjoined; nor tell my passion strong
Upon the dust that glow'd through life for you
And yet this heart of amorous faith demands,
Deserves, a better boon; but cruel, hard
As is my fortune, I will bless love's bands
For ever, if you give me this reward."

This was about 1339. Eight years later, when he was about to quit the neighborhood, he went to take leave of her. "She was seated," he says, "among those ladies who are generally her companions, and appeared like a beautiful rose surrounded with flowers smaller and less blooming. Her air was more touching than usual. She was dressed perfectly plain, and without pearls or garlands, or any gay color. Though she was not melancholy, she did not appear to have her wonted cheerfulness, but was serious and thoughtful. She did not sing as usual, nor speak with that voice which used to charm every one. She had the air of a person who fears an evil not yet arrived." This was their last meeting. In the terrible plague which desolated Italy, Laura was smitten and died. In the margin of his copy of Virgil, Petrarch wrote, on hearing the news: "Laura, illustrious for her virtues, and for a long time celebrated in my verses, for the first time appeared to my eyes on the 6th of April, 1327, in the church of St. Clara, at the first hour of the day. I was then in my youth. In the same city, and at the same hour, in the year 1348, this luminary disappeared from our world. I was then at Verona, ignorant of my wretched situation. Her chaste and beautiful body was buried the same day, after vespers, in the church of the Cordeliers. Her soul returned to its native mansion in heaven. I have written this with a pleasure mixed with bitterness, to retrace the melancholy remembrance of my great loss. This loss convinces me that I have nothing now left worth living for, since the strongest cord of my life is broken. By the grace of God, I shall easily renounce a world where my hopes have been vain and perishing. It is time for me to fly from Babylon, when the knot that bound me is untied."

When Petrarch, in the bitterness of his grief on hearing of the death of Laura, said he had nothing left to live for, he felt as all lovers of his tender and passionate nature must have felt; but not the less, when the severity of the shock passed away, did he act as all men should act in whom the sense of duty is firmly implanted. Love remained, but its character was materially changed; if it still left the poet a dreamer, the patriot appeared with new lustre, invigorated by the concentration of mind which naturally took place when all his earthly hopes and anxieties in connexion with Laura were set at rest, and elevated and purified by the religious sentiment now growing stronger and stronger every day of his life. In heaven he felt that Laura might yet be his. We finally quit this part of his history with the following exquisitely tender lamentation, which appears to have been written not long after her death:—

"The eyes I praised so warmly, and the face,
And arms, and hands, and feet, whose beauty drew
My spirit from myself at their sweet view,
And made me strange among my fellow-race;
Those crisped locks that shone with golden grace,
The angelic mirth that with enchanting glow
Was wont to make a paradise below,
Fill now unconscious dust, their narrow space.
And yet I live; oh! life too hardly borne!
'Reft of the light I loved so well and long,
My weary bark in stormy waves is torn.
Be here an end of all my amorous song:
My vein of inspiration is out-worn,
And nought around my lyre but notes of anguish throng."

Before we speak of his political life, we must transcribe his biographer's picturesque account of the chief event that occurred in connexion with his character as a poet: we allude to his being crowned at Rome. Laura had the gratification of hearing all the particulars of this splendid ceremony, which took place some years before her death. "The morning of the 8th of April, 1341, was ushered in by the sound of trumpets; and the people, ever fond of a show, came from all quarters to see the ceremony. Twelve youths, selected from the best families of Rome, and clothed in scarlet, opened the procession, repeating, as they went, some verses, composed by the poet, in honor of the Roman people. They were followed by six citizens of Rome, clothed in green, and bearing crowns wreathed with different flowers: Petrarch walked in the midst of them; after him came the senator, accompanied by the first men of the council. The streets were strewn with flowers, and the windows filled with ladies dressed in the most splendid manner, who showered perfumed waters profusely on the poet. He all the time wore the robe that had been presented to him by the king of Naples. When they reached the Capitol, the trumpets were silent, and Petrarch, having made a short speech, in which he quoted a verse from Virgil, cried out three times, 'Long live the Roman people! long live the senators! may God preserve their liberty.' At the conclusion of these words he knelt before the senator Orso, who, taking a crown of laurel from his own head, placed it on that of Petrarch, saying, 'This crown is the reward of virtue.' The poet then repeated a sonnet in praise of the ancient Romans. The people testified their approbation by shouts of applause, crying, 'Long flourish the Capitol and the poet!' The friends of Petrarch shed tears of joy, and Stefano Colonna, his favorite hero, addressed the assembly in his honor."

Petrarch's political principles were essentially republican; but above all, whether as a republic, a kingdom, or an empire, he yearned for the greatness and glory of Rome. This it was that produced from him so many eloquent epistles to the popes, in the hope of inducing them to remove the papal see from Avignon to Rome. This it was that made him look with the deepest interest and sympathy on the early endeavors of the great tribune Rienzi. Lastly, this it was that, after Rienzi's fall, caused him to expose himself to the charge of inconsistency by beseeching the emperor Charles to assume the real sovereignty of the country, which as yet only nominally belonged to him as the elected king of the Romans. A striking illustration of Petrarch's boldness of character, and the respect in which he was held by the emperor, in common with all the distinguished men of the time, is given in the poet's account of his interview with Charles at Mantua, in 1354: "He spoke to me about my works, and expressed a great desire to see them, particularly my treatise on illustrious men. I told him that I had not yet put my last hand to it, and that before I could do so I required to have leisure and repose. He gave me to understand that he should be very glad to see it appear under his own patronage, that is to say, dedicated to himself. I said to

him, with that freedom of speech which nature has given me, and which years have fortified, 'Great prince, for this purpose nothing more is necessary than virtue on your part and leisure on mine.' He was struck by the freedom of my speech, and asked me to explain myself. I said to him, 'I must have time for a work of this nature, in which I propose to include great things in a small space. On your part, labor to deserve that your name should appear at the head of my book. For this end it is not enough that you wear a crown and a grand title; your virtues and great actions must place you among the great men whose portraits I have delineated. Live in such a manner, that after reading the lives of your illustrious predecessors, you may feel assured that your own life shall deserve to be read by posterity.'"

A brief record of some of the principal affairs in which Petrarch was engaged will show the estimation in which he was held. In 1342, he was sent to Clement VI. by the nobles and people of Rome, to express their earnest desire that the pontiff would remove his court from Avignon to the imperial city: in this mission he was joined by Cola di Rienzi. In 1343, on the death of Robert, king of Naples, he was commissioned by Clement to go to that city, and obtain accurate information as to the state of affairs in that extraordinary period of Neapolitan history, when Giovanna, the young queen, whose life in so many respects reminds us of that of Mary of Scotland, had been but recently married to her brutal cousin Prince Andrew of Hungary. In 1354, Petrarch was placed at the head of an embassy sent by John Visconti, lord of Milan, to Andrea Dandolo, doge of Venice, in order to induce that state to make peace with their neighbors the Genoese. Lastly, in 1361, he went, at the desire of the same powerful family, to congratulate King John of France on his return from captivity in England after his terrible defeat at Poitiers. In short, he was intimate with all the most eminent personages of his country and time: he was consulted by all, employed by all. These and the other various missions in which he was engaged afforded him opportunities, that he knew how to improve to the utmost, of collecting the rare works of antiquity lying about in the libraries of the few learned men that Italy then possessed, or in the nooks and corners of old monasteries, where their very existence was forgotten. At Arezzo, Petrarch discovered Quintilian's "Institutions;" at Verona, Cicero's "Familiar Letters;" and other works of the immortal orator at Liège, &c.

In the summer of 1357, the poet took up his residence at a village called Garignano, on the banks of the Adda, near Milan. "It stands," he says, "on a slight elevation in the midst of a plain, surrounded on all sides by springs and streams, not rapid and noisy, like those of Vacluse, but clear and modest. They wind in such a manner, that you know not whither they are going, or whence they have come. As if to imitate the dances of the nymphs, they approach, they retire, they unite, and they separate alternately. At last, after having formed a kind of labyrinth, they all meet, and pour themselves into the same reservoir." The chief temptation the spot

contained for Petrarch was a Carthusian monastery, in which he would have lodged, but for the fear of disturbing the monks with his servants and horses, which he had no desire to dispense with. It was in this agreeable solitude that he wrote the letter containing the fine passage, "Like a traveller, I am quickening my steps in proportion as I approach the term of my course. I read and write night and day; the one occupation refreshes me from the fatigue of the other. These are my employments—these are my pleasures. My tasks increase upon my hands; one begets another; and I am dismayed when I look at what I have undertaken to accomplish in so short a space as the remainder of my life. God, who knows my good intentions, will assist me, if it be necessary for the good of my soul. Meanwhile I watch, and find delight in the midst of the difficulties I encounter. . . . I desire that posterity may know me, and approve of me. If I should not succeed in that ambition, I shall at least have been known to my age and friends."

An interesting trait of the simple tastes and kindness of heart which Petrarch preserved amid all the splendors of his fame and the "troops" of sovereign, noble, and distinguished friends, by which he appeared to be environed, is afforded by the following anecdote: There was a jeweller of Bergamo, named Enrico Capri, "a man of great natural talents, who would have taken a good station in literature if he had applied himself early enough to study. But though advanced in years more than in learning, he cherished a passionate admiration for the learned, and above all for Petrarch, whose acquaintance he wished to make. Petrarch met his approaches kindly. The jeweller was out of his wits at his condescension; he spent a great part of his fortune in displaying everywhere the name and arms of our poet, whose likeness was pictured or statued in every room of his house. He had copies made, at a great expense, of everything that came from his pen. The passion for literature grew so much upon him, that he shut up his lucrative shop, and frequented only schools of science and the society of learned men, of whom there was a considerable number at Bergamo. Petrarch candidly told him it was too late in his life to devote himself exclusively to letters. The man of jewels listened to him like an oracle on all other subjects, but persisted in shutting up his shop. He implored Petrarch to come and see him at Bergamo. 'If he honors my household gods,' he said, 'but for a single day with his presence, I shall be happy all my life, and famous through all futurity.' Petrarch consented to visit him on the 13th of October, 1358. Enrico Capri came to take him at his word, and to bring him to Milan. The governor of the country and the chief men of the city received him with the highest honors, and wished him to lodge in some palace; but Petrarch adhered to his jeweller, and would not take any other lodging but with his friend."

Between this period and the time of his death, Petrarch resided successively at Padua; at Venice where he presented his books to the church of St. Mark, and thus founded that celebrated library; and, lastly, at the pleasant village of Arquà, among the

Euganean hills, where Petrarch died, on the 18th of June, 1374. He was found by his people in a sitting posture, with his head reclining on a book, in his library, and, as they thought, asleep. But it was the last sleep which had thus peacefully seized him. He was magnificently buried in a chapel of his own erection, in the parish-church of the same place. Honors of all kinds were paid to his memory by his mourning countrymen, who exhibited in this, as in every other part of their conduct toward Petrarch, the estimation in which they held the man who had added so much lustre to their beloved Italy, not only by his poems and political conduct, but by his great and successful labors in the revival of literature—a result more owing to his industry, learning, and genius, than to those of any other individual.

AIDS TO CONTENTMENT.

How much fretting might be prevented by a thorough conviction that there can be no such thing as unmixed good in this world! In ignorance of this, how many men, after having made a free choice in any matter, contrive to find innumerable causes for blaming their judgment. Shenstone has worked out the whole process with fidelity. "We are oftentimes in suspense between the choice of different pursuits. We choose one at last doubtingly, and with an unconquered hankering after the other. We find the scheme which we have chosen, answers our expectations but indifferently—most worldly projects will. We therefore repent of our choice, and immediately fancy happiness in the paths which we decline; and this heightens our uneasiness. We might at least escape the aggravation of it. It is not improbable we had been more unhappy, but extremely probable we had not been less so, had we made a different decision.

"A great deal of discomfort arises from oversensitiveness about what people may say of you or your actions. This requires to be blunted. Consider whether anything that you can do will have much connexion with what they will say. And besides, it may be doubted whether they will say anything at all about you. Many unhappy persons seem to imagine that they are always in an amphitheatre, with the assembled world as spectators; whereas, all the while, they are playing to empty benches. They fancy, too, that they form the particular theme of every passer-by. If, however, they must listen to imaginary conversation about themselves, they might at any rate defy the proverb, and insist upon hearing themselves well spoken of.

"Well, but suppose that it is no fancy; and that you really are the object of unmerited obloquy. What then? It has been well said, that in that case the abuse does not touch you; that if you are guiltless, it ought not to hurt your feelings any more than if it were said of another person with whom you are not even acquainted. You may answer that this false description of you is often believed in by those whose good opinion is of importance to your welfare. That certainly is a palpable injury; and the best

mode of bearing up against it is to endeavor to form some just estimate of its nature and extent. Measure it by the worldly harm which is done to you. Do not let your imagination conjure up all manner of apparitions of scorn and contempt, and universal hissing. It is partly your own fault if the calumny is believed in by those who ought to know you, and in whose affections you live. That should be a circle within which no poisoned dart can reach you. And for the rest, for the injury done you in the world's estimation, it is simply a piece of ill-fortune, about which it is neither wise nor decorous to make much moaning.

"The heart of man seeks for sympathy, and each of us craves a recognition of his talents and his labors. But this craving is in danger of becoming morbid, unless it be constantly kept in check by calm reflection on its vanity, or by dwelling upon the very different and far higher motives which should actuate us. That man has fallen into a pitiable state of moral sickness, in whose eyes the good opinion of his fellow-men is the test of merit, and their applause the principal reward for exertion.

"A habit of mistrust is the torment of some people. It taints their love and their friendship. They take up small causes of offence. They expect their friends to show the same aspect to them at all times; which is more than human nature can do. They try experiments to ascertain whether they are sufficiently loved; they watch narrowly the effects of absence, and require their friends to prove to them that the intimacy is exactly upon the same footing as it was before. Some persons acquire these suspicious ways from a natural diffidence in themselves; for which they are often loved the more; and they might find ample comfort in that, if they could but believe it. With others these habits arise from a selfishness which can not be satisfied. And their endeavors should be to uproot such a disposition, not to sooth it.

"Contentment abides with truth. And you will generally suffer for wishing to appear other than what you are; whether it be richer, or greater, or more learned. The mask soon becomes an instrument of torture.

"Fit objects to employ the intervals of life are among the greatest aids to contentment that a man can possess. The lives of many persons are an alternation of the one engrossing pursuit, and a sort of listless apathy. They are either grinding or doing nothing. Now to those who are half their lives fiercely busy, the remaining half is often torpid without quiescence. A man should have some pursuits which may be always in his power, and to which he may turn gladly in his hours of recreation.

"And if the intellect requires thus to be provided with perpetual objects, what must it be with the affections? Depend upon it, the most fatal idleness is that of the heart. And the man who feels weary of life may be sure that he does not love his fellow-creatures as he ought."

WATCH against irritation, positiveness, unkind speaking, and anger; study and promote love.



View on the River Nile.

THE RIVER NILE.

THE course of the river Nile is from the fountains of its two upper branches, the Bahr-el-Abiad, or White river, in the mountains of the Moon, and the Bahr-el-Azrek, or Blue river, in the mountains of Abyssinia, the ancient Cush or Ethiopia. The source of the latter branch has been visited, and its position determined, by our traveller Bruce; the source of the former, which, from its superior extent, may claim to be the parent of the river, and anciently bore the name, is as yet unknown. The two streams unite about sixteen degrees north latitude; then flowing northward with one great western bend through Nubia (Pathros), the Nile enters Egypt (Mizraim) at Assouan (Syene), where it rushes over a ridge of granite rocks which lies across the bed of the river and forms the cataracts. Thence flowing in an uninterrupted volume to the Mediterranean, it disembogues its waters mainly by two grand estuaries; one at Rosetta (Bolbitinum Ostium), and the other at Damietta (Phatniticum); the other five known to the ancients being no longer navigable. To these seven channels the prophet Isaiah seems to allude (xi. 15): "The Lord with his mighty wind, shall shake his hand over the river, and shall smite it in the seven streams." So Virgil:—

"Et septem gemini turbant trepida ostia Nili."

The river disperses itself about forty miles from the coast; and as the country enclosed resembles the Greek Δ , it has long received the name of Delta. This district is an effect the gift of the river, having been gradually formed by the mud and sand accumulated where the waters discharge themselves into the gulf, being defended by artificial grounds.

It is noted for its amazing fertility. "As far as the eye can reach," says Savary, "rich crops cover its plains; groves of date, orange, and sycamore trees; streams ever running, verdure ever changing and ever renewing; and abundance which rejoices the heart and astonishes the imagination."

The Nile is variously termed in Scripture; the river (Ex. i. 22; Gen. xli. 1); the sea (Is. xix. 5), the flood of Egypt (Amos ix. 5). It is also called Sihor, Shihor, or Sichor (Isa. xxiii. 3; 1 Chron. xiii. 5; Jer. ii. 18), signifying black, probably from the turbid character of its waters: hence the Greeks gave it the name Melas, and the Romans Niger. The origin of the word Nile is a subject of dispute, some deriving it from a supposed King Neilus, others from two Egyptian words which signify a periodical increase. From the point of junction the course of the Nile is bounded by two ridges of hills of no great elevation, though the western range in the neighborhood of Thebes rises upward of a thousand feet. The hills on the east are intersected by a number of defiles opening toward the Red sea.

About forty miles north of Syene the valley widens, and leaves in some parts a space of eight or ten miles between the river and the hills. Beyond the western range is the immense Libyan desert, in which, running nearly parallel to the river, are the celebrated Oases. The most noted are the Oasis Magna, or El Kargeh; the Oasis Parva, or El Kasser; and the Northern Oasis. They consist of clusters of cultivated spots, resembling islands, the largest of which covers a breadth of a hundred miles. Not only is the Nile of immense importance as the chief means of communicating through its whole extent of two thousand miles, but the very existence of

Egypt as a habitable region depends upon the periodical overflowings of this its only river. These are caused by the tropical rains, which, falling upon the more elevated lands of the interior, are supposed to form large temporary lakes, which, becoming overcharged, pour forth their superfluous waters into the river, and occasion the inundation, which extends in some places to the very foot of the mountains, saturating the parched ground with moisture, and depositing a rich slimy mould. The swell varies in depth from thirty feet in the upper parts of the country to four feet in the northern part of the Delta. As the Nile is devoid of tributaries, and there falls almost no rain (Zech. xiv. 18), Egypt, without this remarkable arrangement of Divine Providence—formerly the mightiest of kingdoms, and even now supporting a population of three millions of inhabitants—must have been and remained a desert.

With the retiring of the waters advances the cultivation of the enriched soil, which receives the seed, and repays it by a rapid vegetation. The parts inaccessible to the flood are irrigated by canals and trenches; and artificial means are employed to raise the water to the more elevated spots. The most usual machines are the *shadoof*, the *sakiyeh*, and the *taboot*. The "watering with the foot," spoken of by Moses (Deut. xi. 10, 11), probably refers to the frequent use which the laborer makes of the foot in the stopping and diverting the stream, turning the earth against it, and making with his mattock a new trench to receive it. In about a couple of months the harvest of every species of grain is gathered in, followed in some parts by successive crops. There is still a species of wheat answering to that seen by Pharaoh in his dream, bearing seven ears upon one stalk.

When the land is not under the influence of the flood, the soil, burnt up by a cloudless sun, and exposed to parching winds, is as arid as the sand of the desert.

The periodical risings of the Nile commence in Egypt toward the close of June; the month of March being the season of the tropical rains. By the autumnal equinox the flood is at its height; and, after remaining stationary about two weeks, it begins gradually to subside, its lowest ebb being in the following May. The whole country presents for two months the appearance of an inland sea; while the higher grounds, with their towns and villages, and wooded knolls, form innumerable islands, to which the inhabitants resort till the waters retire—so completely, to use the Scripture phrase, is the land drowned (Amos viii. 8; ix. 5). "It is no unpleasant sight," says Sandys, "to behold the towns appearing like little islands, the people passing and repassing by boat, and not seldom swimming, who, the less they see of their country, the more is their comfort."

The villages are mostly built on elevated ground; if in low lands, a dam of the common black mould is constructed, which is so adhesive that a very small dike will preserve the fields from inundation. From Cairo, causeways have been made to the neighboring villages, though, as they are in some places broken down, the people are often obliged to wade even to

their chins from place to place with their clothes upon their heads, and not unfrequently to betake themselves to swimming. When the waters have risen rapidly and unexpectedly, whole villages with their inhabitants have been swept away, of which an example came under the observation of Belzoni in 1818.

To provide against such contingencies, artificial reservoirs have been formed from the earliest times, one of which is the lake Birket-el-Keroun, the ancient Mœris, so called from a king of that name, who, finding a natural basin, connected it with the Nile by canals and trenches, and regulated the rush of the current by numerous locks and dams. Many of these canals have been choked up by the accumulation of mud. The most considerable is the Bahr-Yussef, or Joseph's canal, which runs for upward of a hundred miles in a line with the river, and, entering the valley of Faioum, joins the lake. It is extremely winding, so formed with the design of supplying a greater tract of land, though much ground is thereby wasted. The immense quantity of deposit brought down by the annual floods has necessarily raised the banks of the Nile above the surrounding country, and many temples and ruined cities lie half buried under soil and sand. This accumulation has been increased, partly by the gradual filling up of the outlets of the river, and partly by the corrosion of the rocky ridge which forms the rapids at Syene, by which an obstructed passage is now afforded to the mud, which formerly, being checked by this natural obstacle, had over-spread and rendered fruitful the region above the falls. Many parts of the Nubian territory bear traces of a far greater extent of cultivation than they now enjoy. If the bed of the river were not elevated by the same causes and in the same proportion as the banks, the whole country must in process of time become a desert.

As the overflowings vary, their progress is an object of anxious inquiry among the population, and nilometers are established in favorable spots; though, as they are made subservient to the purposes of an arbitrary and unjust government, the official reports are not always to be depended on. In the island Rhoda, opposite old Cairo, is the famous nilometer in an old mosque. It consists of an octagon granite column in the centre of a well to which the river has access. This is divided into carats or digits, according to which the public criers proclaim in all parts of the town the increase of the inundation. If the water is at its full height, the whole pillar of the nilometer is overflooded. In the proportion in which the inundation in the neighborhood of Cairo falls short of twenty-two feet is there distress; if it attain that height a good harvest is anticipated; if it rise above twenty-eight feet, inasmuch as the waters would not subside in sufficient time for sowing the seed, a famine is dreaded. The fruitfulness of the land was proverbial (Gen. xiii. 10); but, as it depends entirely upon the inundation, whence Isaiah speaks of the harvest of the river (Is. xxxiii. 3), famines are not unfrequent, and are especially mentioned among the judgments of Egypt (Jer. xlii. 16). The visitation, however, foretold in Pharaoh's dreams must not

be ranked with an ordinary famine, for not only was it remarkable for its continuance for seven successive years, after as many of plenty, but it is expressly said to have extended to all lands (Gen. xli. 54), even to the land of Canaan, which could be in no respect dependant for the fruits of the earth upon the overflowings of the Nile. In effect there seems to have been a distinction between the years of plenteousness and famine, the former being confined to the land of Egypt (v. 53); whereas, the latter extended over all the face of the earth (v. 56); being doubtless so ordained by God to bring about his purposes with the descendants of his servant Abraham—since, had it merely visited Egypt, the brethren of Joseph had not found him there.

When the waters have attained the desired height, proclamation is made, and the day is given up to feasting and merriment. The pacha and his whole court proceed to Fostat, where the canal commences that runs through Cairo. There, with much pomp and ceremony, surrounded by an immense concourse of people on the shore and upon the water, the pacha gives the signal, the obstruction is removed, and the waters flow into the city. In the evening, all the great squares being floated, the families assemble in boats adorned with tapestry, rich cushions, and every luxuriant convenience, and celebrate the event by a general illumination. The water is drunk with avidity, being noted, upon the testimony of travellers as well as natives, for its delicious flavor. It is filtered and clarified through porous vessels made of a sandy clay, termed by the Greeks *βαυσάλιον*, and by the Arabs, *bardaque*. The most common are of two sorts; one with a narrow neck, called *doruck*, the other with a partition in the neck, which is wider, in which several holes are made. This is termed *ckoolch*. The water oozes through the pores, forms a thick dew on the outer surface, by the rapid evaporation of which the temperature of the vessel and of the water it contains is reduced considerably below that of the atmosphere; and being rippled by exposure to the refreshing breath of the north, contracts a coolness most delicious to so sultry a climate.

Upon a species of table-land at the northern extremity of the western range of hills, stand the pyramids of Jizeh, near Cairo; and as the traveller sails up the stream, he passes, among others ruins, vestiges, more or less imposing, of the sites of Memphis, Hermopolis (Eshmouneim), Lycopolis (Siout), Antæopolis (Gau-el-Kebir), Chemmis or Panopolis (Ekhmin), Coptos (Kouft), and the amazing monuments of the greatness of ancient Thebes, now occupied by four villages, Luxor and Carnak on the eastern, and Gournu and Medinet Abou on the western side of the river. Between Thebes and the cataracts he passes Edfou, with its celebrated temple (Apollinopolis Magna), Ombos (Koum Ombi), and the ancient granite-quarries in the neighborhood of Seyene.

Of the animals connected with the Nile, the crocodile and hippopotamus are mentioned in Scripture, though the latter is not now often seen below the cataracts. The kine in Pharaoh's dream were

probably buffaloes, which pasture among the high grass which clothes the islands of the Nile. "The herdsman," says Savary, "seated on the withers of the foremost, descends the banks of the river, smacks his whip, and leads the way; the whole herd follow, and lowing swim to pasture, blowing the water from their large nostrils. During the summer heats they live in the Nile, lying among the waters up to the neck, and feeding on the tender herb that grows on its banks."—"As the buffaloes," says Mr. Jowett, "rose out of the water on the bank, I was struck with their large bony size. Their emerging brought to mind the passage (Gen. xli. 1, 2), 'Behold he stood by the river: and behold there came up out of the river seven well-favored kine, and fat-fleshed; and they fed in a meadow.' It was the very scene and the very country." The river also abounds in fish, after which the Israelites longed in their journey through the desert (Num. xi. 5); and as it was a main article of subsistence, we see the force of the calamity predicted by Isaiah (xix. 8-10), "The fishers shall mourn, and all they that cast angle into the brooks shall lament, and they that spread nets upon the waters shall languish." In this prophecy is also mentioned another source of advantage arising from this river (Isa. xix. 7), "The paper-reeds by the brooks, the mouths of the brook, and everything sown by the brooks, shall wither, be driven away, and be no more." The papyrus, one of the most celebrated productions of Egypt, was made use of for various purposes, chiefly to construct boats and manufacture paper. Small boats were formed almost wholly of papyrus according to Pliny, having a piece of acacia-tree for the keel. Similar boats are now used, the sides plastered with mud from the banks; and such doubtless was "the ark of bulrushes, daubed with slime and pitch" (Ex. ii. 3), in which Moses was laid. Of larger vessels the sails were made of this material, as is mentioned by Herodotus; and to this Isaiah alludes (xviii. 2), when he describes the Ethiopians sending ambassadors "by the sea, even in vessels of bulrushes upon the waters." But the most remarkable use made by the Egyptians of the papyrus was a writing-material. For this purpose it was not only employed by themselves, but was in such request both by the Greeks and Romans, as to become an important article of export traffic.

Bearing in mind the peculiar characteristics of the Nile—the source of fertility, and even existence to the country—we may form an idea how truly a plague must have been the conversion of its waters into blood—the most remarkable event connected with the history of the river. Nothing was more abhorrent to the Egyptians than blood. They avoided its stain, and admitted few bloody sacrifices. The river was to them a source for constant cleansing; and as they abstained in many cases from animal food, its fish, with the herbs of the field, produced in abundance by the annual overflowings, formed their chief sustenance. Hence, in their blindness, they paid the Nile divine honors, annually presenting in with a human sacrifice: and thus rendering it peculiarly an object of jealousy to Je-

hovah. In the Greek inscription found in the front of the Great Sphinx (given in Egyptian Antiquities, ii. 376), the river is termed *ἡ ὕδαρ*. We learn from the striking description in Ex. vii. 17-24, certain particulars which show how this judgment affected the Egyptians. It was of universal extent. "All the waters in the river were turned to blood" (20)—not merely the main stream, which at this time was confined within its banks, but all the artificial channels, their "streams, rivers, ponds, pools of water" (19), as well as their reservoirs, and supplies for domestic use—their "vessels of wood, and vessels of stone." It destroyed a main article of food—"the fish died" (21). As a consequence it became corrupt, offensive to the smell, and injurious to life—"the river stank" (21). Hence that which before had been attended with such delight, excited universal disgust—"they loathed the waters" (18). It drove them in their despair to "dig round about the river for water to drink, for they could not drink of the water of the river." Thus in the proportion in which the river had been a blessing did it become a curse; so vain and foolish is man to rest in the thing formed, and not in Him who formed it.

The character of the river, and its relative position with the immense desert, stretching over a space of more than three thousand miles' distance to the Atlantic ocean, have raised the expectation that it may be designed for a more extended blessing than it has hitherto been. "The waters of the Nile and of the Niger," says Mr. Hardy, "may in part be one day turned upon this desert; that which is now lost in the sea may supply nourishment to millions; and Egypt may still be 'as the garden of the Lord,' from advantages that will then be derived from new improvements in machinery and new discoveries in hydraulics. These two rivers, the sources of which have been an object of equal interest from time immemorial, and have alike eluded the search of every traveller, appear as if formed for the express purpose of bringing into cultivation the largest desert in the world, when the exigencies of mankind may require an extension of habitable surface. In places where a human being never yet breathed, there may thus arise a countless population; and winds, that have never yet been charged with any sound but the groan of the wanderer as he ventures to cross its parched wilds, may convey the praises of the Lord from the glad and graceful hearts of many worshippers."

Yet, however pleasing such anticipations to the Christian, it may be a question in how far they accord with the simple language of prophecy. There is a day coming, when "the Lord shall set his hand again the second time, to recover the remnant of his people which shall be left, from Assyria and from Egypt, and from Pathros, and from Cush, and from Elam, and from Shinar, and from Hamath, and from the islands of the sea" (Is. xi. 17). In preparation for the return of those who are in the parts of Egypt, the prophet declares (Is. xi. 15), "the Lord shall utterly destroy the tongue of the Egyptian sea"—by which is generally understood the Red sea—"and with his mighty wind shall he shake his hand over

the river" (or Nile), "and shall smite it in the seven streams, and make men go over dry-shod." Whether this is a figurative or literal description of what Jehovah designs in that day, the event must show; but as he has seen fit to seal the river in his book of prophecy, it suggests a caution in the exercise of our imagination, and warns us to remember, that what God has consecrated to his own purposes is no longer an object of human speculation.

WASHINGTON.

BY ELIZA COOK.

Land of the West! though passing brief the record of thine age,
Thou hast a name that darkens all on history's wide page!
Let all the blasts of fame ring out—thine shall be loudest far;
Let others boast their satellites—thou hast the planet star.
Thou hast a name whose characters of light shall ne'er depart;
'Tis stamped upon the dullest brain, and warms the coldest heart;
A war-cry fit for any land where freedom's to be won;—
Land of the West! it stands alone—it is thy Washington!

Rome had its Cesar, great and brave; but stain was on his
wreath;
He lived the heartless conqueror, and died the tyrant's death.
France had its Eagle; but his wings, though lofty they might soar,
Were spread in false ambition's flight, and dipped in murder's gore.
Those hero-gods, whose mighty sway would fain have chained the
waves—
Who fleashed their blades with tiger zeal, to make a world of
slaves—
Who, though their kindred barred the path, still fiercely waded on,
Oh, where shall be *their* "glory" by the side of Washington?

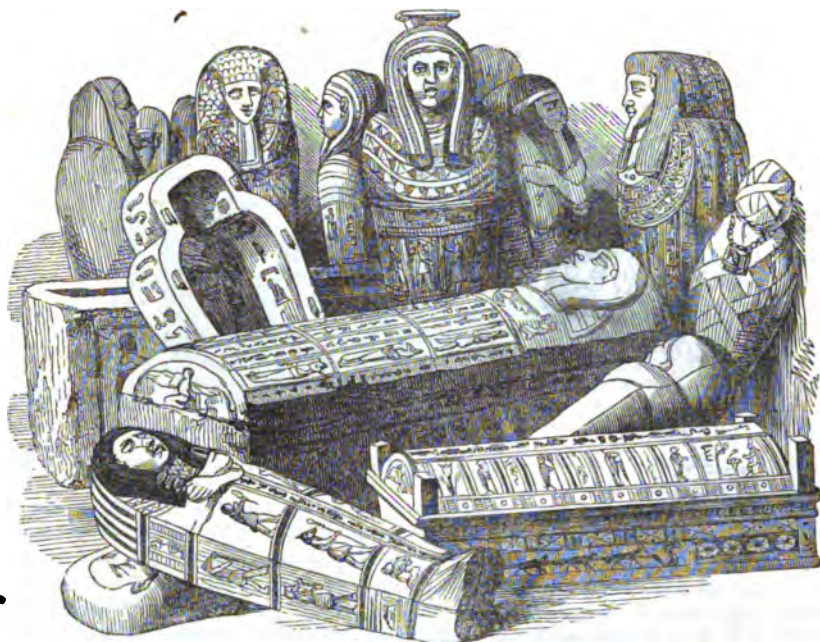
He fought, but not with love of strife; he struck, but to defend;
And ere he turned a people's foe, he sought to be a friend.
He strove to keep his country's right, by reason's gentle word,
And sighed when fell injustice threw the challenge—sword to
sword.
He stood the firm, the calm, the wise, the patriot and sage;
He showed no deep, avenging hate—no burst of despot rage.
He stood for liberty and truth, and dauntlessly led on,
Till shouts of victory gave forth the name of Washington.

No car of triumph bore him through a city filled with grief;
No groaning captives at the wheels proclaimed him victor chief.
He broke the gyves of slavery with strong and high disdain,
And cast no sceptre from the links when he had crushed the chain.
He saved his land, but did not lay his soldier trappings down,
To change them for the regal vest, and don a kingly crown.
Fame was too earnest in her joy—too proud of such a son,
To let a robe and title mask a noble Washington.

England, my heart is truly thine—my loved, my native earth!
The land that holds a mother's grave, and gave that mother birth!
Oh, keenly sad would be the fate that thrust me from thy shore,
And fluting my breath, that sighed, "Farewell for evermore."
But did I meet such adverse lot, I would not seek to dwell
Where olden heroes wrought the deeds for Homer's song to tell;
Away, thou gallant ship! I'd cry, and bear me swiftly on—
But bear me from my own fair land—to that of Washington.

EXPERIMENTS.—Write upon paper with a solution of muriate of cobalt, and the writing while dry will not be perceptible; but if held toward the fire it will then gradually become visible; and if the muriate of cobalt be made in the usual way, the letters will appear of an elegant green color.

Write with diluted nitrate of silver, which, when dry, will be entirely invisible; hold the paper over a vessel containing sulphate of ammonia, and the writing will appear very distinct. The letters will shine with the metallic brilliancy of silver.



Mummy Cases and Marble Sarcophagi, from specimens in the British Museum.

MUMMIES.

OWING either to the religious opinions of the Egyptians or to the nature of the country, which rendered interment inconvenient, or the want of fuel, which rendered burning difficult, they embalmed all their dead, and deposited them in subterraneous chambers, or in grottoes excavated in the mountains. An immense number of them have been found in the plain of Saccara, near Memphis; hence called the *plain of the mummies*, consisting not only of human bodies, but of various animals, or heads of animals, bulls, apes, ibises, crocodiles, fish, &c. Numerous caves or grottoes, with contents of the same kind, are found in the two mountainous ridges which run nearly parallel with the Nile from Cairo to Syene. Some of the most remarkable of these tombs are those in the vicinity of ancient Thebes in the Libyan mountains, many of which were examined by Belzoni, and those near Eleithas (described by Hamilton), further up the river, which, though less splendid than the Theban sepulchres, contain more illustrations of the private life of the Egyptians. The sepulchral chambers are almost entirely covered with fresco paintings and bass-reliefs, and frequently contain statues, vases, &c. Some of them (the royal sepulchres) consist of suites of spacious halls and long galleries of magnificent workmanship. Those of private individuals vary according to the wealth of the deceased but are often very richly ornamented. Many of these tombs have been ransacked by Arabs for the purpose of plunder, and great numbers of the mummies destroyed for the rosin or asphaltum they contain, which is sold to advantage in Cairo. The tombs and mummies are, many of them, two or three thousand years old, and are in part indebted for their

preservation to the dryness of the soil and the mildness of the climate. The processes for the preservation of the body were very various. Those of the poorer classes were merely dried by salt or natron, wrapped in coarse cloths and deposited in the catacombs. The bodies of the rich underwent the most complicated operations and were elaborately adorned with all kinds of ornaments.

Embalmers of different ranks and duties extracted the brain through the nostrils, and the entrails through an incision in the side; the body was then shaved, washed, and salted, and after a certain period the process of *embalming*, properly speaking, began. The whole body was then steeped in balsam, and wrapped up in linen bandages; each finger and toe was separately enveloped or sometimes sheathed in a gold case, and the nails were often gilded. The bandages were then folded round each of the limbs, and finally round the whole body, to the number of fifteen or twenty thicknesses. The head was the object of particular attention; it was sometimes enveloped in several folds of fine muslin, the first of which was glued to the skin, and the others to the first; the whole was then coated with a fine plaster. A collar of cylindrical glass beads of different colors was attached to the mask which covered the head, and with it was connected a tunic of the same material. The beads, both in the collar and tunic, were so arranged as to form images of divinities, of the scarabæus, the winged globe, &c. Instead of this the mummy was sometimes placed in a sort of sheath, made of paper or linen, and coated with a layer of plaster, on which were paintings and gilding. These paintings represented subjects relating to the duties of the soul, and its presentation to the different divinities, and a perpendicular hieroglyphi-



EMBALMING.—The processes of bandaging and painting an embalmed body; designed from the ancient Egyptian monuments.

cal inscription in the centre gave the name of the deceased, and of his relations, his titles, &c. The whole was then placed in the coffin.

Those mummies which have been examined present very different appearances. One class has an opening in the left side, under the armpit, and in another the body is whole. Some of those which have been opened have been dried by vegetable and balsamic substances, others by salt. In the former case aromatic gums or asphaltum were used (the gums, when thrown into the fire, give out an aromatic odor); in these the teeth and hair are generally preserved; but, if exposed to the air, they are soon affected. Those prepared with asphaltum are of a reddish color, and are in good preservation. Those dried with saline substances are of a black, hard, smooth appearance. On exposure to the air they attract moisture, and become covered with a saline substance. Those mummies which have no opening are also partly preserved by saline substances, and partly by asphaltum. In the latter, not only the cavities of the body are filled with it, but the flesh, bones, and every part seem to be penetrated by it: it was probably injected in a hot state. These are the most commonly met with. They are hard, black, and without any disagreeable smell. The whole mummies prepared with salt alone are white and smooth, and resemble parchment.

The coffin is usually of sycamore, cedar, or pasteboard; the case is entire, and covered within and without by paintings representing funeral scenes, and a great variety of other subjects: the name of the deceased is also repeated on them in hieroglyphic characters. The cover, which is also entire, is ornamented in the same manner, and contains, too, the resemblance of the deceased in relief, painted, and often gilded. The breast is covered with a large collar; a perpendicular inscription occupies the centre, and funeral scenes the sides. The coffin is often enclosed in a second, and even third case, each of which is also ornamented with similar representations.

A short time since, a female mummy, presented to the National History Society of Shrewsbury, Eng-

land, by the late Dr. Butler, was unrolled in the presence of about 200 highly respectable spectators, a great part of whom were ladies, it having been stated that there would be nothing indelicate in the operation. Mr. Birch, from the British Museum, superintended the unrolling, previous to which he described the process of embalming among the Egyptians. The outer coffin, in which the remains were deposited, announced that it contained the body of Tannor-en-Rhons, Priestess of Amon, who was dedicated to Osiris, presiding in the West, Lord of Abydos, that he would give offerings for the sake of the deceased. The lecturer began at the feet of the corpse to untie the linen bandages which enveloped it. These consisted of several hundred pieces, of the hue of wash-leather, but capitally woven cloth, and in some parts not much discolored, and pretty strong. On one of these pieces was an inscription, stating the age of the mummy to be 21 years. On unlapping the bandages round the neck, the head fell off, and was found quite perfect, several of the teeth in front being still fixed in their sockets, one of them only being loose. The cartilages of the ears were perfect, the dried flesh having the semblance of dark gingerbread. The body was disclosed with a vast deal more difficulty than the head, the embalmers having dipped it into the hot bitumen so long and so frequently as to destroy the flesh, and render the skin and its envelope, one mass. Gradually, however, the toes appeared, all perfect except the nails; the feet being small and very attenuated. The muscles and skin of the legs, and the cap of the knee, next became visible, and the hands crossed on the abdomen were traced after great labor. The hip bones, the shoulders, and the ribs, were exposed one after another, till at last the fully-developed frame of a human being, 3,000 years old, lay exposed to the gaze of the company. Upward of three hours were occupied by the process.

Human bodies preserved in other ways, either by accident or some artificial preparations, are also called mummies. The Gaunches, or aboriginal inhabitants of the Canaries, preserved the bodies of their deceased friends, which have been found in great num-

pers in the catacombs in Palma, Ferro, Teneriffe, &c. The natives called them *saxos*. They are dry, light, of a yellow color and strong odor, and often injured by worms; they are enveloped in goat-skins and enclosed in cases. They are supposed to have been dried in the air, after having had the entrails removed; and they were also covered with an aromatic varnish. Humboldt found mummies prepared in a similar manner in Mexico. The Peruvians also had the art of preserving the bodies of their incas.

The burial-place of the capuchin monastery at Palermo, in Sicily, is a large subterranean vault divided into several wide and lofty galleries, in the walls of which are niches containing several hundred human bodies, kept in an upright position by being fastened to the wall behind, and clothed in their usual dress. The monks have a peculiar manner of preserving bodies, which they keep secret. Natural mummies are frequently found preserved by the dryness of the air. In a vault of the cathedral at Bremen, called the *lead-cellar* (because it was formerly employed for melting lead for aqueducts and organ pipes), are bodies in good preservation. In the monastery of St. Bernard, on Mount St. Bernard, the bodies of travellers who have been buried in the snow are deposited in a chapel, in which there are open windows protected by grates. They are placed in a sitting position, leaning each on another's breast. The cold prevents their putrefaction, and gives them time to dry. The Gaulish mummies, in the cabinet of comparative anatomy, in the Jardin du Roi, were found in Auvergne in the last century. They bear no marks of any balsamic preparation, but are enveloped in linen, and appear to have been interred with great care. It is uncertain whether their preservation was owing to the nature of the soil, or to a peculiar and now unknown process of embalming.

THE FUTURE.

An inclination to pry into the future seems to be as natural to man, as it is for him to look back to, and dwell with a mournful interest upon, the past. And many have been the efforts made, and means adopted and put faith in, for bringing before us and realizing the events as yet buried in the womb of time, particularly those which bear upon our own individual interests. The superstitions and quackeries which have thus been set on foot among mankind, present no exalted view of our common nature; but we must not be too ready on this account, to overlook them. In history they take an important place among moving and influencing causes, from the days of Roman augury down to modern fortune-telling. The disregard paid by a Roman naval commander to the omen of the sacred chickens refusing to eat, and his throwing them contemptuously into the sea, proved the cause, by dispiriting his forces, of his losing a battle; and Montaigne tells us that the predictions circulated in favor of Charles V. in Italy, actually terrified a French commander, who had seemed an honest man,

out of his allegiance to his own king; and, by inducing him to revolt, nearly caused the loss of an immense number of fortresses to the enemy. Nor must we overlook that, though the well educated are generally exempt in our days from these follies, there are still a vast number of persons who either fully believe in the possibility of ascertaining future events by supernatural means, or at least have not their minds quite made up to the opposite conclusion.

The most prevalent form of this delusion is that of common fortune-telling, the mention of which almost induces us to recall what has just been said with respect to the educated classes; for we believe the fact is, that there never is wanting in London or Paris a seer, male or female, who is in the receipt of a large income entirely drawn from the pockets of the wealthy. The present practitioner in the latter capital is a Madame Normand, who not only tells those who come before her in person of many wonderful things, but, after the manner of another class of pretenders, transmits fortunes by post, a due fee having previously been transmitted to her. We have been assured, upon excellent authority, that a very large proportion of the trade of this mystic personage is with the English of the upper classes who visit Paris. It seems almost absurd to enter upon a reasoning against such delusions; but we shall merely adduce the pointed argument which has been urged against the reality of all such pretensions to supernatural knowledge; namely, that, if it were real, the possessor of it might be expected to turn it to account in fund speculations, an obviously more rapid and efficient means of acquiring wealth than taking guineas from weak people of fashion. After such examples of credulity, the faith which serving maids place in gipsies is not to be wondered at, however much it may be deplored. It may be sufficient at present to point out to them the absurdity of expecting fortune from persons who are themselves so little blessed with it as to be in rags and beggary; how easy it is to promise where there is no personal obligation to fulfil the promises: how much reason there is to suspect only an interested motive in such promises; in one word, the Vicar of Wakefield's answer to his daughter on being told that she had given her half-crown to a vagrant who foretold her marrying a squire, "You fool, I would have given you an earl for half the money!"

There is still a considerable inclination to believe that a presentiment, or vague consciousness of coming evil, occasionally arises in the minds of individuals. Many believe, or half believe, in this form of divination, who deny all others. Many striking instances could be adduced. For example, a widow lady residing in Edinburgh, where she was the delight of a brilliant literary circle, spent an evening in the company of her friends previous to the day when she was to pay a visit to a nobleman in the country. Though apparently quite well, she left her friends with desponding language upon her lips, saying that she would never see them again. In about a fortnight, they heard the sad intelligence of her sudden death at the house which she was visiting. This seems a very good example of the anecdotes told

about what are called presentiments. The explanation is, that where a real feeling exists, it is a physical sensation premonitory of the actual event—something perhaps not easily describable, but which is, nevertheless, essentially connected with the result prognosticated. Though this lady seemed in perfect health, yet it is not unlikely, since she did die suddenly a few days after, that she had a dim experience of some sensations betokening what did befall, or perhaps only depressing her spirits and raising melancholy ideas. But in a vast number of cases there is probably no real feeling, but only a casually excited idea, which the mind is too weak at the moment to shake off. In the multitude of cases, one now and then proves true, and is cried up as something wonderful, while the failures are forgotten, or pass unnoticed. The only way in which presentiments could be proved as things of possible occurrence, would be to note all the instances of vague apprehensions of evil arising in the mind from no observable causes, and ascertain a vast disproportion of the instances of failure to the instances of realization; but this plan has never yet, as far as we are aware, been adopted.

A reference from dreams to future events is, perhaps, among the earliest and most natural superstitions of mankind. A dream presents a state of things, at least as to arrangement, quite different from ordinary realities; and as this proceeds from no act of will on our part, but is apparently forced upon our observation, it has been of course presumed that the strange phenomena connected with dreaming must have some meaning. The notion has probably derived support in many instances from the ideas of the dreamer being occasionally realized in the manner which we shall presently advert to. Happily, the days are now past when the ladies of a family in the middle walks of life would regale themselves every morning by a relation of the dreams which they had experienced during the past night; but a faith in this kind of divination still prevails extensively among the less-educated classes. There is a class of cheap publications, called *dream-books*, giving explanations of every kind of dream—as how fire denotes sudden news, losing teeth the death of a friend, seeing a dead horse good luck, and entering into water some impending evil, &c. The folly of all such means of discovering the future is so great, that we can scarcely condescend to use an argument on the subject. One, however, being ingenious and appropriate, is worthy of being noticed; namely, that we dream less frequently of the living as dead, which is an event likely enough to happen, than of the dead being alive, which is impossible. No doubt, a dream may occasionally be verified, and that in two different ways. For instance, we may dream of the death of a friend who we know is seriously ill; but this is a mere transcript of a series of ideas which has gone through our mind when awake, according to the ordinary laws of dreaming. We know, awake, that the friend is dangerously ill, and have probably imaged the event of his death. This recurs in sleep, with only this change, that the event is supposed to have happened. Or it may even be, that the idea of a

probably fatal termination to the illness has only occurred in sleep, for such processes of reasoning are within the powers of the mind in that state. The only difference between the conclusion drawn awake and that in the dream is, that, in the latter, the event comes before us generally in a more decided manner, with images which we shrink from in our ordinary moments, and thus makes a greater impression upon us.

On the other hand, the knowledge of an event not looked for, and which does not come within the ordinary range of probability, may at a rare time be acquired through the medium of a dream; but this can only be considered as a mere casual coincidence. Thus, we may dream of a person being drowned whom we did not know of even being at sea. This may turn out to be true, and we then conceive that something supernatural has happened, not taking into account that there are innumerable dreams portending similar events which prove not to be true, excite but a momentary sensation in the dreamer himself, and are soon forgotten. In the dreams of even a healthy person, everything seems confused and distorted, and hardly a night passes but we connect things together in our dreams in such a manner as we never do in our waking moments. We find ourselves in familiar conversation with people we never saw, and who are totally out of our sphere. We find ourselves in a church, and see persons in the pulpit the most unlikely to take their station there. It is not surprising that among the infinite variety of improbable circumstances continually presenting themselves, it may happen, at a rare time, that a real event quite unlooked for may be announced to us.

The kind of vaticination called second sight—the only wonderful thing about which, is its being local to the Scottish highlands—may be disposed of much in the same manner. Men of imaginative character and melancholy temperament, living in a solitary manner, and brooding over their own thoughts till the mind gets into a morbid state, announce that they see visions of tragical occurrences happening, or about to happen; as, for instance, the perishing of a friend in a distant boating excursion, or the funeral of one now in perfect health. A very common form of such visions is the person referred to, with a shroud more or less drawn up toward his head. Probably such visions are in many instances as real as they are alleged to be, but only so in the natural manner now familiar to medical men. It is now perfectly understood that, in particular diseased conditions of the mind, its notions take the form of actual objects of sense, or appear as a picture before the eyesight. Such is probably the explanation of most cases of alleged second sight. The realization of the vision is probably an occurrence of the same rarity as the realization of a dream, and to be accounted for in the same manner. We hear only of the lucky hits, but never of the much more numerous failures.

Having now discussed all the false modes of looking into the future, let us inquire what are the true, and how far we may really, by sound inferences, calculate upon what is to come.

It may be pretty safely set down as a general proposition, that man, in possession of his ordinary

powers, only divines or supposes the future by the light which he derives from experience. From the regularity and perseverance of certain occurrences up to this time, he presumes that they will continue to occur, and considers them, therefore, as certain. Some which occur with less unvarying regularity, he considers as probable; some of still less constancy of occurrence, he deems only possible. Thus there are, certain, probable, and possible.

The certain are again of two kinds, definite and indefinite. The motions of the heavenly bodies, which can be exactly measured, and the very eccentricities of which are regular within a certain range, are examples of definite certainties. So, also, are the divisions of time into days, lunar months, and years, and the periodical recurrence of seasons, which flow from those motions. The term certain, it may be remarked, is only comparative. Man is not, strictly speaking, certain of any of these events; for anything he can tell, the whole of the sidereal motions may stop to-morrow. But, as compared with any knowledge we have of (for example) the weather of to-morrow, the anticipation of the phenomenon of sunrise may be held as a certainty.

While the recurrence of seasons is, as a general fact, a definite certainty, it is indefinite also, because no one can be sure of the exact time when any season is to commence or end. Other examples of indefinite certainties are presented in the destruction and reproduction of animal and vegetable life. We know that all living things will die, but we can not say when with certainty. In our times, however, though the termination of the individual life remains as indefinite as ever, diligent observation and calculation have enabled us to form tolerably accurate conclusions with regard to the average duration of life among men and women, and this knowledge has been applied to various useful purposes.

The next class of future events is the probable, which is a very large one, since a vast number of the common affairs of life supply matter for it. A great proportion of probable events come so near the certain, that, in the ordinary course of things, men must treat them as such. For example, in proposing to travel by a stage-coach, we deem the event of our arrival at our destination so certain (though it is only probable), that we never scruple to pay our fare beforehand.

What we here mean by possible is the reverse of probable, and might rather be termed improbable, since it is an exception to the ordinary course of probability. An event happening, which we reckon merely possible, but improbable, may be, or rather in general must be so, from our ignorance of minute circumstances connected with it. For instance, a person may set out on a day's journey, apparently in good health, thus rendering his accomplishing the journey highly probable. When we discover afterward that he has been stopped half-way by illness, we call this stop an improbable occurrence; while, if we were fully acquainted with the state of his health, the delay might be reckoned rather probable than improbable. But here we must act upon our limited knowledge, and it would be quite absurd to

do otherwise. If the journey we have mentioned was a highly necessary one, and the traveller himself not aware of any approaching ailment, it would be improper to tell him to put it off, merely because it was possible he might be stopped by illness.

This acting upon ordinary probability need not be dwelt on, as it is almost the whole business of our life. There are cases, however, where it would be imprudent to act upon probability; for possibility, though ranked as improbability, must always be taken into account in looking forward to what is to come after, for it will sometimes take place when we least think of it, and it may be seriously injurious if it overtakes us unprepared. A ship-master, in traversing a wide ocean where there was no intermediate port at which to stop, would be much to blame if he had not provisions for his ship's company during what may be called an improbable length of voyage.

If the minor or least probable be of much greater importance than the major or most probable contingency, it is then the former we chiefly look to in our calculation. For instance, if, in the case of some adventure, our total ruin were to be in the proportion of one to ten, and a partial gain the opposite proportion, few people would like to run the risk. But, reverse matters, and suppose, as in the case of the lottery, the minor or least probable was a great gain, and the major a small loss, few would object to such a chance; still, as in the other instance, it would be the improbable to which our attention would be directed.

The Scripture expression, "The race is not to the swift, nor the battle to the strong," would, for a ready apprehension of its meaning, be more correct if thus paraphrased, "The race may not be to the swift, nor the battle to the strong." For probability is in favor of swiftness and strength, though, in the course of providence, cases may happen otherwise. Making the best of contingencies is a great part of the business of life.

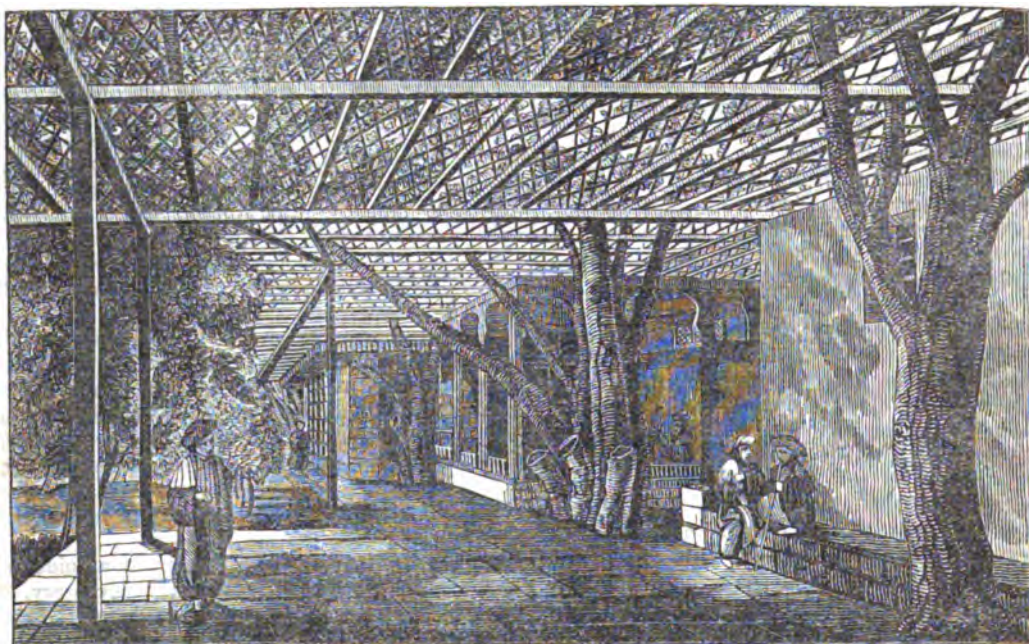
In using the experience of the past as a guide to a knowledge of the future, great care is necessary, for fallacies beset the inquirer on every hand. Physicians of the most extensive practice admit that medicine is still in an imperfect state. Acute diseases, such as fevers, are often assuming new appearances, where experience is completely set at naught. Even diseases, which are pretty uniform in their symptoms, affect different constitutions so variously, that the same treatment proves beneficial to one person and hurtful to another.

In short as to those probabilities which approach to certainties, we are allowed to look but a short way forward. This is particularly the case with respect to the weather, as to which there are so many methods of prognostication. We have, at the most, but a few hours' certain indication of changes as to temperature or moisture, and often no time at all. To plan out the seasons for years or even for months, has never yet been attempted upon principles acknowledged to be scientific. There is nothing wonderful in guesses occasionally proving true; but this is the most that has been done. Even the barometer, though unerring in indicating the existing con-

dition of the surrounding atmosphere with regard to moisture, gives but a short, and for the most part, uncertain notice of the future. Sometimes we have a very low state of the glass, with hardly any change in our own locality; though we afterward learn that there have been storms and earthquakes elsewhere. Still, this is rather an indication of the present than the future.

It appears from the whole inquiry, that it is given to man to have but an obscure perception of the future; and this is only consonant with that wise benevolence which reigns over all mundane things; for it is easy to see, that it would not be well for man to anticipate future events too clearly. There are, however, some of the probable class of events which he may, without any great effort, calculate

upon, and which it is only a duty to provide for. From our experience of the past, we know what are the necessities and duties to which we may in certain circumstances look forward; as, for instance, if we marry, we may presume that there may be a family to support; or, if we incur a debt, that the creditor will in time be claiming its payment; and for these contingencies every wise and good man will be anxious to be prepared. Vaticination upon events of this order may, therefore, be considered as laudable; and it may safely be said, that if the one half of the attention had been paid to them which has been bestowed in divining who is to be the future spouse, or whether life is to be crowned with fortune, there would have been much less misery in the world.



Veraüdahs of a Modern Oriental House.

ORIENTAL VINE-SHADES OR ARBORS.

PLINY, in speaking of vines, mentions three kinds and modes of training:—1. Those which ran along the ground;—2. Those which grew upright, without support;—3. Those which were sustained by a single prop;—4. And those which covered a frame or trellis. We have ourselves seen all these methods in the East: and although we doubt that the first method of treating the vine was the prevalent one in Syria and Asia generally, as Pliny seems to intimate, it no doubt existed there, the vineyard being probably, as now, laid out in ridges over which the vines extended. May not this explain the “spreading vine of low stature” of Ezek. xvii. 6? But some one of the other vines, or all of them, did of course supply the shade under which

the Hebrews delighted to repose. In reading this and the parallel passages, it is by no means necessary to suppose that vines were trained over a trellis, and formed a sheltering arbor; since one or more of the standard vines, which grow unsupported, and which to a considerable extent form the vineyards of the East, would extend a grateful shade whether in the suburban garden, or in that which the house enclosed. Vine-shades, or arbors, such as our cuts exhibit, must however be understood as included, and are perhaps principally intended. These are and have been in use, wherever the vine is common. Palestine was more of a vine country than Egypt: yet even in Egypt, the ancient inhabitants were fond of sitting in vine-arbors. There are examples in their paintings; and one of considerable interest appears in the mosaic pavement of Fræneste. In



Monastery of St. Catharine, Mount Sinai.—The Monks sitting under the shade of their Vine-trees.

this example the arched trellis, over which the vine is trained, spans a stream, on each bank of which, within the arbor thus formed, persons repose on couches, drinking wine and playing on instruments of music. The old rabbinical writers attest the prevalence of the general custom to which the text alludes; as they are constantly describing their learned predecessors as sitting and studying the law, meditating, or conversing, on particular occasions, under fig-trees, olive-trees, and vines. Where the fig-tree grows, its broad leaf and expanded shade naturally point it out for that preference which the scriptural intimations assign.

Although we have supposed that the vine and fig-trees may have been generally in the court of the house, this does not by any means preclude the notion that the people may not also have rejoiced in the shelter of the fig-trees and the vines which grew in their suburban gardens. Indeed, as these became dangerous places in troublous times, when it is unsafe to venture beyond the walls of a town, the blessed condition of the times of which the prophet speaks, would be beautifully evolved by our understanding him to intimate, that the people might then repair in safety to their gardens, and that none should make them afraid as they sat there under their own vine and under their own fig-tree.

THERE are three kinds of praise; that which we yield, that which we lend, and that which we pay. We yield it to the powerful from fear, we lend it to the weak from interest, and we pay it to the deserving from gratitude.—*Lacon*.

MENTAL INDUSTRY.

BY J. HAGEN.

THAT whatever is truly great and enduring is to be accomplished only at the expense of unremitting and well-directed industry, is a truth with which the minds of the young can not be too strongly impressed. That all minds are by nature equally vigorous, we do not contend, but that none are so constituted as to be able to attain to great excellence in any intellectual pursuit, without much mental labor, we believe that we hazard nothing in asserting. While many, who, in the commencement of their career, promised scarce anything, have by dint of industry accomplished more than others who were supposed to be infinitely their superiors, is a truth equally well established. The faculties of the mind, no less than the bodily organs, require exercise to keep them in a healthy and vigorous condition. By means of exercise the weakest are strengthened, and without it the most powerful gradually become dull and enfeebled.

In reading a great poem, looking at a wonderful picture, or examining an extraordinary piece of mechanism, we are apt to ascribe its accomplishment to powers of a higher order than those with which we have been endowed, when, in all probability, the mind which produced what we so much admire was originally little if any superior to our own. But by keeping the one grand object ever in view, and directing its energies to that single point, it has been enabled to reach the enviable position which it holds. In contemplating the works of great men we seldom look further than the results, and are too much dazzled with the brilliancy of their achievements to

think of the amount of time and labor which have been expended on those wonderful productions.

How many of the millions who read Gray's *Elegy* stop to consider that, between the commencement and the completion of that comparatively short poem, no less than nine years intervened, most of which time it was probably before the mind of the author, undergoing innumerable alterations and corrections, before it was brought to the degree of perfection in which we now behold it? or that the papers of Addison, so much admired for their simplicity and purity, were written over and over again at least twenty times, before he ventured to give them to the public.

Though *Paradise Lost* was written by Milton in his old age, the idea of composing such a work is said to have been conceived by him in his sixteenth or seventeenth year, and was, doubtless, ever uppermost in his thoughts, the grand centre toward which they all tended, the great work to accomplish which, he toiled and studied incessantly. And the time expended in writing it was only what was necessary for the putting together of materials, which, to collect, arrange, and fit for their places, had cost him the labor of a lifetime.

We know of no man whose works are more generally looked upon as the immediate outpourings of nature than those of Burns. And yet these will, we believe, on examination, prove to be as much the result of study as those of any other man. He tells us himself that his mind was ever active; at the cart and at the plough he was always studying. He also informs us, that his poems are the result of easy composition, but careful and laborious correction. True, his knowledge was not the knowledge of books. His study was that of the living world around him. The book which he admired most was the book of nature; and particularly that part of it which treats of the human heart, few men had read more carefully or understood better. Many of Byron's poems were written in an exceedingly short time, but the remark which we made with regard to Milton will in some measure apply to him, and we need not repeat it here. His life, though to some extent a life of dissipation, was also a life of study.

From the professors of another department of the fine arts, painting, innumerable examples might be adduced in support of our position. A few will suffice.

Ludovico Carracci for a long time gave so little promise of excellence, that his master and others advised him to abandon the art. But want of success only prompted him to greater exertion; as was to be expected, he triumphed, and with his two cousins, whom he induced to join him, he founded the celebrated school of Bologna, which for a long time sustained the sinking glories of Italian art. Guido, who was one of their pupils, is another instance. So slow and unpromising was he at first that his fellow-pupils stigmatized him with the name of the *ox*. And yet while most of those who treated him with so much contempt are forgotten, he has left behind him a name which will live as long as whatever is beautiful in art shall be remembered. Hogarth, as an example of more modern times, is also worthy of mention. He tells us that he owes nothing to nature,

and everything to industry. And surely if any man possessed *genius* Hogarth did.

Be not then discouraged by repeated failures. Let want of success, instead of disheartening, rather stimulate us to renewed exertion, and inspire us with a determination to succeed, and succeed we must. And though small must ever be the number, even of the most gifted minds who may expect to rival the achievements of a Milton, a Newton, a Raphael, or a Shakspeare, still smaller is the number of those who may not, by a proper cultivation of the powers which God has given them, accomplish that which will deservedly rank them among the benefactors of their race.

COLOR OF THE AIR.

WHEN we look at the sky on a clear day, it appears like a large light blue arch set over our heads, and seen through the (supposed) invisible substance called air. But this is not the case; there is no blue dome above us, and when the sky is viewed from any elevated region of the earth, as the top of a high mountain or a balloon, and where we would expect that this supposed blue vault would be more distinct, and manifest its blue tint more decidedly, it appears not more blue, but dark, or black. In proportion as the spectator rises above the surface of the earth, *and has less air above him, and that rare, the blue tint gradually disappears*; and if he could attain a height at which there is *no air*, the sky would be total darkness all around, except in the direction in which the sun's rays fall upon him. This leads to the inference, that *the air itself is a blue color*. But how does it happen that we see this blue color of the air only when we look at the sky, or at a distant mountain or forest? Why is not the blue color seen in the air surrounding us when we look toward a house or wall not so far removed, or even in the air in a room, or in the air contained in what we call an empty glass vessel? A very simple experiment will explain the reason of this apparent anomaly. If we take any large glass vessel which contains a liquid of a deep color, and have several glass tubes of different diameters, from an inch to a 10th or 20th of an inch, and fill these tubes with liquid out of the large vessel; though we have the same liquid in all, and hence, in all, the matter which causes the color it will be seen that the tint will gradually become more faint in proportion as the diameter of the tube is less, until, in the smallest, the liquid is clear and colorless like water. The intensity of the color is just in proportion to the mass at which the spectator looks, and a very small quantity of that which, in large quantities, has a strong color, does not present any color at all, and thus, though the great body of air which is opposed to us, when we look at a clear sky or any distinct object, transmits a sufficient quantity of blue rays to produce an impression of that color on the eye, the small quantity in a glass, in a room, or even within the compass of a few miles, cannot convey enough of blue rays to the eye to produce the color which the air manifests in a large body.



Vale of Wyoming.—From an original Drawing.

THE VALE OF WYOMING.

THE poetical associations with "delightful Wyoming" have given it a celebrity that its otherwise sequestered situation would never have attained, although the historical events which there took place were important enough and terrible enough to attract the attention and interest the feelings of all who might have become acquainted with them. The celebrity given to it by Campbell's beautiful poem may perhaps justify our quoting the historical account of these events as a point of curious comparison. The poem is too well known to need any lengthened quotation, and we shall therefore only present the poet's description of its state, previous to the commencement of its troubles in 1778.

"Delightful Wyoming! beneath thy skies
The happy shepherd swains had naught to do
But feed their flocks on green declivities,
Or skim perchance thy lake with light canoe,
From morn till evening's sweeter pastime grew,
With timbrel, when, beneath the forests brown,
Thy lovely maidens would the dance renew;
And ay those sunny mountains half-way down
Would echo flageolet from some romantic town,
And scarce had Wyoming of war or crime
Heard, but in transatlantic story rung;
For here the exile met from every clime,
And spoke in friendship every distant tongue;
Men from the blood of warring Europe sprung
Were but divided by the running brook;
And happy, where no Rhenish trumpet sung,
On plains no sieging mine's volcano shook,
The blue-eyed German changed his sword to pruning-hook."

This beautiful poetical picture of a state rivalling the golden age, is severely contradicted by the historian; and it is no slight proof of the poet's art, that, without any violation of the truth of nature, he has been able to elevate such a tissue of crime and cruelty into a poem of such extreme beauty. This he has done chiefly by selecting only a few actors,

and thus leaving the baser passions which actuated the multitude in obscurity. The historian says:—

This naturally beautiful district was dotted with eight new townships, each containing a territory of about five miles on both sides of the river Susquehannah. The climate was genial, the soil luxuriantly fertile, and there was that alternation of hill and valley, wood and water, careful cultivation and natural wildness, which constitute the most picturesque and lovely scenery. But this terrestrial paradise had been inhabited by unquiet spirits, who had laid the foundations of their establishments in war, and who had been obliged all along to protect them with the sword. Romantic travellers, enchanted with the natural beauty and tranquillity of the spot, fondly fancied a peaceful, happy population, in harmony with the scene. There could not be a greater mistake. The district, in the natural order of things, or by its geographical position, seemed properly to belong to Pennsylvania; but the colony of Connecticut claimed it in virtue of an old grant, and it was first settled and cultivated "by a numerous swarm from the populous hive of Connecticut." The Pennsylvanians instantly set up *their* counter-claim, and referred to maps and their natural boundaries as the best arguments to support it. The Connecticut men, who always held what they got with great tenacity, refused to relinquish possession, and, after many long and angry debates, the two colonies actually went to war with one another about Wyoming. And these hostilities between Pennsylvania and Connecticut were prosecuted with such earnestness, that they lasted even after the breaking out of the war with England, and were only suspended by the near approach of a common danger. Several Pennsylvanian families had obtained a settlement in the district: these, like a very large portion of the colony of Pennsylvania, were decided royalists; and

it appears that some of the most considerable of the Connecticut settlers entertained the same political principles. But there, as elsewhere, the revolutionary party gained an ascendancy which they were incapable of using with moderation. The fiercest of factions and feuds raged through all the townships, converting that little paradise into a very hell. These violent animosities were not confined to particular families or places, or marked by any line of distinction; they crept under every roof; they divided father from son, brother from brother; they made an incessant jar and discord; they poisoned all the sources of domestic happiness, and they converted the denizens of the spot into creatures as fierce and savage as the red Indians, or the wild beasts that had formerly occupied it or prowled over it.

Such was the real condition of Wyoming, which poets and other writers have described as one of the happiest spots of human existence! The revolutionary party, after oppressing and driving out most of the royalists, sent a large reinforcement to serve in the army of Congress, and thus laid themselves open to attack from the savages and from their expelled brethren. They had built some little forts, but these were unequal to the protection of the district, every step of which was familiar to the exiles; and, as their best men had gone to fight against the British, they had but indifferent garrisons to put into these forts. They had received repeated warnings, but they continued to be obstinately blind to their danger, despising the tory fugitives, and relying on delusive promises made them by some of the Indian tribes. Early in July they were roused from this dream of security by the sudden appearance of 800 men on the bank of the Susquehanna. Of this hostile force scarcely more than one half were real Indians, the rest being Anglo-Americans disguised as Indian warriors. The outcasts from Wyoming had been joined by fugitive royalists from other parts of the back settlements. They were reported to be led by an Anglo-American partisan called Colonel John Butler, the same who had offered General Carleton the service of the Indians in Canada, four years before, and by one Brandt, half Mohawk and half American, and (as not uncommon with such hybrids) said to be a man of great cunning and ferocity, with an unquenchable thirst for blood. It appears, however, that there are some reasons for doubting whether Brandt was a man of this character, and whether he was engaged at all in the fatal Wyoming incursion. But whoever were the conductors of the expedition, it was conducted with monstrous cruelty, nor could less be expected from such a combination of evil passions and habits. The imagination and the inventive faculties of the Americans were, however, employed in the appalling narratives which were soon afterward spread through the world; and it is now established by the best authorities, that scarcely a tithe of the horrors that have figured in many books had any foundation in truth. It is also established as an unquestionable fact that months before the irruption into Wyoming, early in the spring, Congress had determined upon carrying the

war into the country of the Indians (how mercilessly such expeditions were conducted had been proved the preceding year), and that the design of extermination had only been suspended through want of means and the exigencies of war in other quarters.

On the appearance of the hostile force there were only sixty American regulars in the district, under the command of Colonel Zebulon Butler, said to be of the same family as the Colonel Butler that was leading on the invaders: but the militia, under the command of Colonel Dennison, amounted to some 300 men. The Indians and their allies entered the valley of Wyoming near its northern boundary, and took without resistance one of the forts called Wintermoots, which they burnt. This was the first notice of their arrival. The militia and all the inhabitants capable of bearing arms assembled at Fortyfort, a stronger place on the west side of the Susquehanna, and four miles below the camp of the invaders. Washington was actually sending some regular troops to the district; but Colonel Zebulon Butler rashly resolved, without waiting for their arrival, to go out from Fortyfort and fight these real and sham Indians. He found them well posted in a plain, partially covered with pine-trees, dwarf oaks, and underwood; and, while he was moving on in single column, he was saluted by the fire of Indians from behind bushes and trees. Zebulon Butler, however, formed into line; but a body of Indians turned his left flank, which was composed of the militia, and poured a destructive fire on his rear. Upon this the word "retreat" was heard, the militia broke, and it was not in the power of Zebulon Butler and his officers to form them again. The sixty regulars were obliged to join in the flight; but they could not take the road by which they had advanced;—the enemy was in front, and on one side was a marsh and a mountain, and on the other the deep river. As soon as their line was broken, the Indians and their equally savage allies threw down their rifles and muskets, and fell upon them with their tomahawks. The massacre became general—the cry for quarter and for mercy was unheeded. Rather less than sixty men escaped by swimming across the river, hiding in the marsh, or climbing the mountain; only three prisoners were taken and preserved alive; and the rest of the force, regulars and militia, officers and men, amounting altogether to nearly four hundred, were butchered on the spot. Colonel Zebulon Butler, who, as a regular officer, ought to have proceeded with more judgment, and Colonel Dennison, the head of the militia, had the good fortune to escape. Butler, understanding that no quarter would be allowed to the troops of Congress, fled from Wyoming with his very few surviving men. Dennison, seeing the inhabitants so terror-struck "that they gave up the matter of fighting," proposed terms of capitulation, which the enemy granted to the inhabitants. But these unfortunate people, dreading the vindictive visitations of their white brethren as much as the native fierceness of the red men, generally abandoned the fair country, becoming in their turn outcasts and wanderers without property and without a home. The invaders collected stock and produce, seized upon everything

that was moveable and worth the carriage, burnt all the houses, levelled the forts, destroyed all the works and improvements of man, and then, on the approach of a force detached by Washington, retreated back into the wilderness, covered with human blood and scalps, loaded with booty, and leaving behind them a sadder wilderness of their own making—

"When, where of yesterday a garden bloom'd,
Death overspread his pall, and blackening ashes gloom'd."

The troops of Congress soon retaliated; the regiments Washington was sending were reinforced by a great many riflemen of Morgan's corps; and they rushed upon the Indian settlements, destroyed their corn, burnt their villages, exterminated all they could surprise, and forced the rest to retire farther from the frontiers of the colonies. The red men who escaped awaited another opportunity for revenge.

DESPISE NOT SMALL BEGINNINGS.

It is related of Chantrey, the celebrated sculptor, that when a boy, he was observed, by a gentleman in the neighborhood of Sheffield, very attentively engaged in cutting a stick with a penknife. He asked the lad what he was doing; when with great simplicity of manner, but courtesy, he replied, "I am cutting old Fox's head." Fox was the schoolmaster of the village. On this the gentleman, asking to see what he had done, and pronouncing it to be an excellent likeness, presented the youth with a sixpence. And this may be reckoned the first money Chantrey ever received for the production of his art.

This anecdote is but one of a thousand that might be cited of as many different men, who, from small beginnings, rose to great stations and influence; and shows the importance of not despising the day of small things, in any condition or circumstance of life. All nature, in fact, is full of instructive lessons on this point, which it would be well for us more thoroughly to study and appreciate.

The river, rolling onward its accumulated waters to the ocean, was, in its small beginning, but an oozing rivulet, trickling down some moss-covered rock, and winding, like a silver thread, between the green banks to which it imparted verdure.

The tree, that sweeps the air with its hundred branches, and mocks at the howling of the tempest, was, in its small beginning, but a little seed, trodden down under foot and unnoticed; then a small shoot, that the leaping hare might have for ever crushed.

Everything around us tells us not to despise small beginnings; for they are the lower rounds of a ladder that reaches to great results, and we must step upon these before we can ascend higher.

Despise not small beginnings of wealth.

The Rothschilds, Girard, Astor, and most of the richest men, began with small means. From cents they proceeded to dollars; from hundreds to thousands, from thousands to millions. Had they neglected these first earnings; had they said, "What is

the use of saving these few cents? they are not of much value, and I will just spend them, and enjoy myself as I go"—they would not have risen to be the wealthiest among their fellows. It is only by the economical husbanding of small means that they increase to large sums. It is the hardest part of success to gain a little; that little once gained, more will easily follow.

Despise not small beginnings of education.

Franklin had but little early education; yet look at what he became, and how he is now revered. Ferguson, feeding his sheep on the hills of Scotland, picked up merely the rudiments of learning, but subsequently rose to be one of the first astronomers in Europe. Herschel, also, the great astronomer, was in his youth a drummer-boy to a marching regiment, and received but little more than a drummer-boy's education; but his name is now associated with the brightest discoveries of science, and is borne by the planet which his zeal discovered. A host of instances rise up to testify that, by properly improving the small and perhaps imperfect beginnings of knowledge, they may become as foundation-stones of a temple of learning, which the future shall gaze upon and admire.

A man can scarcely be too avaricious in the acquisition of knowledge; he should hoard up his intellectual gains with the utmost assiduity and diligence; but, unlike the lucre-seeking miser, must put out his knowledge of usury, and by lending out his stock to others, increase by this commerce of thought his capital, until his one talent shall have been five, and his five have gained them other five.

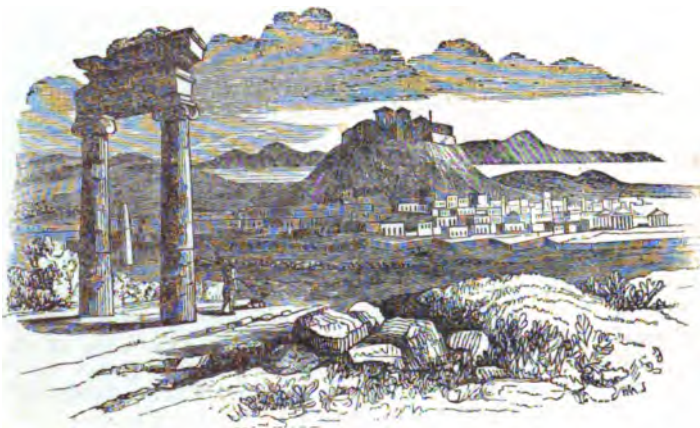
Despise not the small beginnings of fame or honor.

The fame which springs on a sudden, like a mushroom plant, is seldom lasting. Truth, fame, and honor, are of slow but generally sure growth, ascending by degrees from the lower offices to the higher stations—from the regard of a few to the applause of a nation. But he who despises the lower steps of honor because they are few, will seldom reach the higher; and he who spurns at the commendation of his own circle, as too small a thing to seek after, will never secure the esteem and renown of a state or kingdom.

Despise not the small beginnings of error.

The walls of a castle have been undermined by the burrowings of small and despised animals; and the beginnings of error, though at first unheeded, will soon, if not checked, sap the foundations of truth, and build up its own wretched dogmas on its ruins. All his first errors are small; despise them not: they will soon increase to great ones, and perhaps devastate society.

A LOVE OF READING is one of the passions, which, like all other passions not so good, grows by what it feeds on; and that parent who can, and does not furnish the means of whetting an appetite so salutary, when well directed, is guilty of the grossest injustice to his children.



Athens.

ATHENS.

CONNECTED with all that is graceful, beautiful, and heroic, in our recollections, there is perhaps no word in the whole vocabulary of language which has so much of interest attached to it as that prefixed to the present article. That which it represents is fraught with association. In all we read, and hear, and do, it has a place—a place, it may be unperceived, and but correlative, yet still a place of high and important influence. Where is there a spot within the range of European civilization, the destinies of which have not been affected by her renown, her literature, or her deeds? What language is uttered by the lips of those nations whose power and position are most mainly connected with the welfare of the world, which has not imbedded in it some trace, some considerable trace, of Attic aspiration?

Far more, may it be unhesitatingly asserted, that the spirit of Greece moves upon the course, and mingles with the atmosphere of modern glory and usefulness, than ever did the mighty majesty of Roman power influence the soul, and form the character which exhibits the mind of later times. Notwithstanding the proximity of period of her all-conquering successor, Greece has become so intertwined with our affections and our thoughts as to secure permanent and paramount influence over us. Her empire is especially intellectual, and thus its endurance is immortal. Spirit alone it is which enjoys a vitality arising from the essential infusion of divinity. The body yields to the stroke of death, and returns to the beggarly elements of which it is composed, and becomes dissolved among the winds of heaven; but the soul survives all changes, and amid ruin, havoc, and desolation, overcomes even the shock of elements themselves. So it is with Greece: occupying a portion of the earth's surface utterly insignificant, even as a tenth-rate state, and continuing as an empire through a duration far less than that of almost every other which has been recognised on earth, she yet has contrived to fill the world with her annals, and all memories with her fame—to make her literature a portion of school-boy learning, and the collegiate study of every land. It is a disgrace to be ignorant

of her records, and unparticipant in the promotion of her renown. And why is this? Because Greece was the nursery of letters, and the cradle of the arts. No vulgar motives prompted her endeavors. No common theme engaged her exertions. Naturally elegant, she has erected out of the debasement of heathenism a graceful mythology, combining all the beauty that mental association could conceive; and, flourishing in an age when warlike conquests were the highest of imaginable inducements, she embellished the earth by the prowess of her mind, and has left us copies which we strive in vain to imitate.

Nothing could prove more the power of her genius than the circumstance, that it depends upon the existence of no extensive effort. The greater part of those wondrous erections from which the celebrity of this oft-talked-of land arises, are comparatively of small size, and the whole of the period of its credible history, beginning some time prior to its importance as a state, and continuing to the period of its amalgamation with the Roman empire—which was long after the brightness of its glory had departed, and during which all those deeds of noble prowess were performed that have covered her heroes with imperishable honor—was little more than the space of 500 years. Athens itself, even in the acme of its power and extent, covered scarcely one fourth of the ground now occupied by the British metropolis, and held a population considerably less than the numbers found in the generality of our best commercial and manufacturing cities. According to Col. Leake, avowedly the best topographer of Greece, they did not amount even in the most flourishing periods of the republic to more than about 116,000, and of these not more than 40,000 could be properly accounted citizens. How powerful then must be the force of that energy which could burst the barriers of political insignificance, and leave an indelible impress on the features of every civilized nation on the globe. But the freshness of her glory has passed—the vigor of her life is extinct; and well has the poet of passion described her in saying, that still

“’Tis Greece, but living Greece no more.”

Connected and indissolubly bound up as they are

with their country's love, we can not look upon the remnants of her architectural splendor, without coupling also many references to the cloud of illustrious personages who make up the list of her warlike and literary worthies. Every temple has its history, every grotto its legend, and every statue its tale. And in dwelling on the places they inhabited all becomes animate with the feelings, the thoughts, and the doings, by which these places were distinguished. It is not in Athens as in other cities of almost equal note, where the objects of interest are few and scattered, while other things unworthy of notice fill up the wide intervals between; here every spot is full of thought, and we have not sufficient of other objects to take off from the mental oppression of uninterrupted excitement.

The town is now beginning slowly to recover from the desolation by which, partly from the long course of ages, but very chiefly through the devastations of the late war, it was reduced. And even now, notwithstanding the presence of the young king, the streets are comparatively deserted, and few of the houses have roofs. But the elements of improvement are at hand, and the Greek government have for some time been assiduously employed in clearing and bringing to their original levels the approaches to, and the platform of, the Acropolis. All the military works of the Franks and the Turks have been removed, and the citadel is again rapidly putting off its air of a fortress of the middle ages, and resuming the appearance of its ancient simplicity and grandeur; and nothing indeed now is left on the summit of the rock but those crowns of its olden glory, the Propylæa, the Parthenon, and the Erechtheion. Depôts have been formed in the temple of Theseus, and in the Parthenon, for the reception of any fragments that may be found, either in the Acropolis or in the city below; all of which are preserved with scrupulous care, under the direction of an officer created about two years ago, entitled the *Superintendent of Antiquities*. Works were some time since contemplated for the renovation of the admirable port of the Piræus, the restoration of which alone is needed to restore Athens to its pristine influence in the Grecian peninsula.

For the most part the country of Greece is extremely varied, and some of it beautifully picturesque; parts of it bleak, desolate, and barren; others beautifully wooded, clothed with luxuriant verdure, and musical with the rippling of crystal streams; but, of all, perhaps, the site of Athens is most singular. Mr. Wordsworth, the able Master of Harrow School, who visited the place in 1840, describes it by saying that "It looks as if the surface of the country had once been in a fluid state, swelling in huge waves, and that then some of these waves had been suddenly fixed in their places into solid and compact rock, while the rest were permitted to subside away into a wide plain. By some such agency as this, we might fancy that the object now before us had been produced. Hence we might suppose to have been formed the insulated rocky beak of the hill of St. George (or to use its classic name, Mount Anchesmus); hence the tabular rock of the Acropolis, rising from

the plain in the centre of the city, as the large natural pedestal on which its future statues and temples were to be supported; and hence the lower and larger ridge at the southwest verge of Athens, which commences a little to the north of the Pnyx, and terminates in the eminence of the Museum."

This is certainly a correct description of the external feature of the country, but we doubt whether the learned author has not erred in supposing a course of concomitant effects to have been engaged in forming its features. To us, we must acknowledge, it appears as if the rocks had been projected by powerful volcanic action long after the diluvial deposit had been settled. In describing the principal objects of the city, we can not do better than begin with that which is most prominent, the Acropolis. The height is about the centre of the city, though very far from being the centre of the space enclosed by the walls, and contains the subject-matter of greatest interest among the memorabilia of this ancient place. The ground is formed of a perpendicular rock, with a flat summit about a thousand feet in length, and five hundred feet in breadth; and within this space is comprised the most sacred, and the most renowned of those edifices which have been so long the glory of Athens, and made it the most interesting spot of ground on the face of the heathen earth. On all sides, save the west, the rock presents a perpendicular escarpment, in the sides of which are several grottoes, which we shall hereafter notice. On the west, which is the only road accessible without difficulty, the height is approached by an easy declination which falls into the Agora, or lower portion of ground, which is considered the most honorable portion of the city, and fills up the space that intervenes between the Pnyx, the elevation on which the public meetings were held, and the Areopagus, on the highest summit of which the sacred council sat. On the top of this rise, leading to the Acropolis, stands the Propylæa or gate-entrance. It is a magnificent gateway, composed of marble brought from Mount Pentelicus, and served both as an approach and military defence to the citadel. The front or central part consisted of six Doric columns, fluted, about twenty-nine feet high, supporting a pediment, and was approached by four steps; this centre was flanked by two wings. Behind this was a vestibule of six Ionic columns, placed parallel to each other, which led to five openings or doors, of which that in the centre was the widest. The ceiling of this communication rested on triple lengths of marble laid across the beams belonging to the side aisles, resting respectively on a lateral wall and the architrave of the nearest row of columns; these beams were about twenty-two feet long; those on the central passage about seventeen feet long. On these beams rested the slabs of the ceiling, decorated with various ornaments. From these five openings steps led to a portico which faced the platform of the Acropolis, and had a front and pediment similar to that at the western end of the Propylæa. The west front, with its pediment, was existing in 1676; but the upper part of the west front was ruined during the late war of Independence. The eastern side of the

Propylæa was destroyed in 1656 by the explosion of a quantity of gunpowder, in the part between the five doors and the west front, which had been converted into a magazine. It was through this splendid entrance that all the great processions of the republic were conducted, and especially those of the *Panathænaic* Jubilee, when an offering was carried to the presiding goddess of their city, the Minerva Polias, whose temple stood within the walls of the Acropolis, opposite the Parthenon. All that was glorious in the career of an Athenian was connected with this portal, and one of the earliest inducements offered to excite the emulation of a future hero, was the hope that he might drive his car in the festal processions through the central doorway into the citadel. Even national enemies paid their tribute to the magnificence of this erection; and when Epaminondas was inciting his countrymen to transfer the glory of Athens to Thebes, he exhorted them to uproot the Propylæa of the Athenian Acropolis, and plant them in front of the Cadmean citadel.

The chief edifice on the summit of the Acropolis was the temple dedicated to the virgin goddess, and called after her the *Parthenon*. The title of *Parthenos* was assigned to her in order to designate her invincibility, an attribute which this temple especially declared. It has been almost universally considered the most beautiful building that was ever erected, and has served as a model of grace and beauty from the earliest ages to the present day, and still stands unrivalled in the excellence of its proportions. Mr. Gifford, a most intelligent writer, who visited Greece in the early part of 1837, says: "In its present-state the Parthenon is undoubtedly the most majestic building I ever saw, and I hardly know whether if it were completely restored it might produce so profound an impression as it now does. It would become more beautiful, certainly, but perhaps less interesting; for the successive dilapidations of ages which its present aspect exhibits, excite a feeling of reverential enthusiasm, which the restored work might fail to produce." It was erected about the year 450 before Christ, and is built like the Propylæa of the white marble of Pentelicus, on the highest level of the Acropolis. Its principal front is toward the west, and before it is placed the magnificent colossal statue of Minerva, in bronze, which was the work of Phidias. Looking northward from it the city, and beyond it the plain of Athens, formed into a great peninsula by mountains, lie before the view, and thence rising over all the variety of that beautiful country of field and vineyards, and villages, the sight rests on some diminished object of the distant hills. In the day of its glory also there was all the interest of life and its concerns. The husbandmen issuing to their daily toil, or some festal procession winding its way through the olive groves to some lonely shrine. But alas! how changed is now the scene; solitude and desolation fill the place—and the most cheerful objects that fill the eye are now the inanimate productions of the soil waving in the breeze. Let us hope that a brighter day has risen for the honored and the brave—that in the gallantry with which the sons of Greece have strug-

gled for their independence, we may see the germes of that spirit which shall emulate their fathers' deeds.

The exterior of the Parthenon was composed of two noble porticoes, connected by a row of pillars which ran along the side of the building. Above the pillars in front rose the pediment, enriched with some of the choicest labors of Phidias, finished with such exquisite skill that after the lapse of near 2,000 years we find the backs of his figures more elaborately worked than are the fronts of many of those of modern times. Every portion of the architectural ornament was enriched by the choicest execution. The alto-relievo group on the eastern pediment is too far gone to be restored or even deciphered; but on the western we have more materials, and its subject has been ascertained to be the contest of Minerva with Neptune for the dominion of Athens. On the eastern front of the Parthenon, beneath the metopes, are still left the marks of the round shields once attached there, and under them the traces of the inscription of those who wore them on the field of battle.

Within, it was divided into three compartments; in the inner one of which, especially called the *Parthenon*, was the statue of Minerva, constructed by Phidias of gold and ivory, and considered one of the most astonishing efforts of his skill, while behind it was the entrance to the public treasury. The Athenians, with their characteristic elegance, seeming thus to place that which was so important to them under the guardianship, as it were, of their tutelary goddess.

This noble edifice is now much injured, though it is probable that the last two ages have contributed more to its destruction than the whole of the previous period. It suffered much during the war between the Venetians and the Turks, and as much if not more, during the late contest. A great portion of the sculptures by which it was decorated now fill an ample space in the Elgin collection in the British Museum.

A little to the northward of the temple of Minerva Parthenos, is that of *Minerva Polias*. This was the tutelary deity of the city; and though the other, from its size, beauty, and position, has become far more celebrated, yet this, in the consideration of those by whom both were revered, was of more importance. It was the statue of this temple which was emphatically the ancient statue. To it the Panathænaic procession, that fervid exhibition of the greatest religious festival of the people, was directed; and to it the *peplos*—the embroidered *fasti* of Athenian glory—was annually dedicated. How strict an identity the spirit of idolatry has observed in all ages, among all people, and under all circumstances, is singularly shown in this pagan procession. Apart as it seems, and far removed from every link of connexion with the superstitions of the church of Rome, and still further from the extravagances of Hindoo priestcraft, in spirit, essence, yea, even in its very details, it is closely associated with both. As the votaries of the former have, ever since the very origin of its corruptions, been accustomed to clothe their images of saints, and as they are even at the present day in

the habit of presenting their votive offerings of mantles, kirtles, and hoods, in order to secure the interposition of imagined souls of sinful men and women with the Almighty, omniscient, and all-merciful God ; and as the latter in the inland districts of India, and in all the countries of eastern Asia, where fanaticism and ignorance reign with a horrible oppression, still invest their idols with gems, the brilliancy of which almost vie with the reflective rays of light itself ; so this all-important festival was held among the most polished, the most enlightened, the most intellectual people on the face of the whole earth, at least during their own day, for the purpose of presenting to the statue of their goddess, a drapery for the covering or adornment of her still-life nakedness, as if with the very intent of showing us, that, however enlightened and elevated in other respects and for temporary periods, man, when left to himself, is altogether in the dark as to the higher objects of his destiny.

Of the temple of the Minerva Polias, an idea may be formed by imagining a *cella*, or open space, of oblong form, of about ninety feet long, extending from east to west, enclosed by a row of pillars on every side, supporting a broad architrave, the whole of the interior being uncovered. At the west end, this was intersected by an irregular transept, and at each of the extremities there was a portico. A good conception of what all or most of the Grecian porticoes were, may be formed by those who have seen either that of the postoffice in St. Martin's-le-Grand, or a representation of it. They did, indeed, form the natural end of the building : the pillars were erected to support the long beams of the roof, and upon them they rested the triglyphs in old erections, after a regular model, representing what in the earlier buildings they in fact were, the ends of these beams. The architrave was properly the side of the beam which was laid across the lateral beams, in order to support the two inclined pieces which met, and laid against each other to form the roof. The triangular space Δ thus formed, constituted the pediment, on the face of which, as at the present day among the Greeks, the richest and most elaborate groups of sculpture were frequently, almost invariably placed.

The southern portico of the temple of Minerva Polias was not like the other two, supported by Ionic columns, but by caryatides or sculptured figures of human beings. The interior of the nave, or long open portion of the building, was intersected by two marble partitions parallel to the east end, and that was divided into three separate chambers, of which the eastern was the narrowest. The most western of these chambers seems to have served as a corridor, or ante-church to the other two. The apartment next to it was a shrine, dedicated to Pandrosus ; and the eastern, considered the most sacred part of the edifice, was especially the shrine of Minerva, and called peculiarly and particularly the temple of Minerva Polias. The space of the southern side, enclosed by the caryatid portico, was called the Cecropium, from the supposition that it was the burial-place of Cecrops. The whole temple was denominated the Erechtheum, from Erechtheus, one of the earlier

kings of Athens, by whom the Acropolis is believed to have been founded, and by whom the city was dedicated to Pallas or Minerva, the goddess of wisdom. In this sacred edifice was preserved the olive-branch of Minerva, by which, in her contest with Neptune for the dominion of the city, she obtained the victory. The offering of the latter was his trident, indicating the control of the sea, by which the peninsula of Athens is situated, and almost on every side washed ; that of the former was the olive-branch, a symbol of the benefits to be derived by the cultivation of the soil, the peaceable avocation of agriculture ; and thus the olive-branch, which indeed derived its emblematic meaning from the still higher and more interesting source of the dove of Noah, came to be a sign of the absence of contention. This sacred olive was preserved in the Erechtheum, and thus, with the characteristic elegance of the Athenians, was a pleasing and excellent association formed ; the olives being the most valuable produce of the soil of Athens, and their cultivation was accordingly encouraged by express laws, which imposed heavy penalties on those who injured them. This provision was confirmed by a universally-received and carefully-inculcated impression, that all the olives of Attica were derived by cuttings, or otherwise, from the Morian olives of Colonus and the neighboring academy, which had themselves originally been propagated from the sacred tree of Minerva, preserved in the Erechtheum ; that having, it was believed, been produced by the divine agency of Minerva herself from the soil of the Acropolis. The original olive-tree was burnt by the Persians when they took the citadel ; but the belief in its sanctity was increased, if that were possible, when subsequently, on visiting its site, the tree was found to have put forth fresh sprouts two cubits in height.

To the poets of Greece the olive has rendered much service ; it enabled them to connect every spot of Attica with the most sacred spot of the Acropolis, for every tree was considered but as a branch of this sacred stem, and thus every portion of their country became sanctified to the conjoined principles of heroism, patriotism, and religion.

We have been thus somewhat particular in our description of this temple and its appendages, because it offers a fair example of all the temples of Greece, both in its form, the style of its architecture, and the associations connected with it.

Besides these two temples, there was also another dedicated to Venus, in the Acropolis, which, with the other two, is now in a state of dilapidation. The whole of the space was enclosed by a wall, which ran round on the extreme verge or height of this remarkable rocky eminence. The wall on the north side was called the *Pelasgicum*, a term also applied to that part of the city immediately below it ; and by some also to the whole of the Acropolis. Traditional report ascribes this erection to the Pelasgi, the ancient tribe of Greece ; and it is not improbable that part of the existing wall was a portion of that ancient building, and therefore is the oldest monument of Athens. The south wall was rebuilt and strengthened by Cimon, the son of Miltiades, from

whom it derived the appellation of *Cimonium*; in some places it is nearly sixty feet high.

In the space northward of the Acropolis stands the temple of Theseus, of which we shall speak hereafter; and eastward and northward of it, extended a large site within the ancient walls, connected by many associations with the history of this interesting city, and frequented, much as are the suburbs of London in our own day. There also stood the stone of Hadrian, the gate of the Agora, and the tower of Andronicus. At the northeast corner is the *Prytaneum*, and at the southeast the street of the tripods. This was an avenue of small edifices or temples,* leading to one of the gates, and supporting a number of tripods. Nearly due east, and just without the modern wall, stands the great temple of Jupiter Olympus, and by it runs the stream of the Ilyssus, which encloses the island of Eleusinium, where were practised those disgraces to humanity, the Eleusinian mysteries. The stream itself is a diminutive rivulet, and we wonder how anything so apparently insignificant could ever have been rendered famous. With the poets and philosophers resident at Athens, indeed, this was not the case, for with them it was looked upon much as we should think of the river Lea before it falls into the Thames; but it is not surprising that, to those living at a distance, its neighborhood to a place associated in their mind with all that was great and distinguished, should have invested it with an ideal beauty, and obtained for it both song and celebrity. The two streams that run on either side of Eleusinium are now almost dry, and one of them may indeed be crossed nearly dry shod.

A little to the east of the island, and beyond the river, was the Panathenaic Stadium. This was the place where the exercise for running was taken, and where the foot-races were held. It was in the form of a parallelogram, with one end rounded like a horse-shoe. It rose gradually from the low ground which formed the bank of the Ilyssus, on which its square end nearly rested. It was about six hundred feet in length, and its shelving margins were cased with seats of white marble; it is now a long grass-grown hollow. The runner started from the lower end, and having arrived at the top, which was called completing one course (*dromos* or *stadion*), turned round the concave part (*kampteer*), descended in a line parallel to his ascent, till he arrived at the goal (*balbis*), which was a point a little to the east of that from which he had started; thus he accomplished a double course, called *diaulos*. Chaplets of victory, and a profusion of flowers, which had probably been gathered from the banks of the Ilyssus, were showered on the heads of the successful competitors by the spectators on the seats above them, who never failed to greet their arrival with acclaiming approbation.

Almost immediately under the Parthenon, at the very foot of the rock of the Acropolis, near the street of the tripods, was the great theatre of Athens, dedicated to Bacchus. It was formed by the sloping rock in which its seats were cut. Each seat was a

* Commemorative of the victories of the Choregi, gained in the neighboring theatre.

semicircle, and each semicircle increased in extent as it rose in height. Only two of these seats of rock are now visible; the rest are concealed by the accumulation of soil, the removal of which would probably reveal the whole of them, and perhaps exhibit the complete shell of the theatre. The stage on which the actors performed was partly enclosed by the seats, but chiefly spread out backward, until it was enclosed by a square wall behind. The whole was uncovered, and presented to the eye of a spectator within the theatre a gorgeous panorama of natural scenery, over-arched by a sky the beauty and serenity of which led the inhabitants to find all their enjoyments in the open air. The whole of the dramas of the Greeks were written with a continued reference to this circumstance, and it has been well observed that most of them, the choruses especially, would lose almost all their beauty and point if attempted to be performed within a covered place. The advantages thus possessed, conveyed forcible impressions to the minds of an audience; but we must acknowledge that we can not pretend to such a degree of refinement as to fully appreciate the beauties of a dramatic representation, where ear-trumpets and telescopes were only obviated by the introduction of an intolerable clamor, and buskined and horrible masks. We strongly suspect that, like many of the dramas of our own day, the productions of the Greek playwrights were much more adapted for the closet than the stage. Of the extent of the theatre of Bacchus some notion may be formed, when it is stated that the number of spectators which it held is computed at the lowest rate at thirty thousand. The *Académie de la Musique* was a nutshell to it.

Above the seats is a grotto, first converted into a temple by Tharsyllus, a successful *choregus* or rival in the production of choruses to the people; this temple has been converted into a church. A large fragment of it is now lying on the slope of the rock, converted into a drinking-trough!—*sic transit gloria mundi*. A little to the left is a niche for a statue, and also some holes bored, as if for the insertion of beams, on which in the more effeminate times of Athens a *velarium* or covering was perhaps extended. These are all the remains of the theatre. Silence and desolation now reign where formerly thousands assembled for the enjoyment of vanity.

On the southwest side is the ODEUM, or musical theatre of Herodes Atticus, named by him the theatre of *Regilla*, in honor of his deceased wife. It was erected in the second century of the Christian era, and was the first building of the kind in Greece.

At the northwest corner of the Propylæa is the grotto of Apollo and Pan, and near some steps which lead up to the Acropolis. It is one of the most celebrated of the instances of the simple monuments of the earlier ages of Athens; measuring about six yards in depth, ten in height, and five in width. In the sides are niches cut for the reception of statues and votive tablets, which have now disappeared and left their hollow sockets in the rock.

With this cave, is associated another object of interest—the fountain called CLEPSYDRA, from a supposition that it secreted a part of its waters at certain



Areopagus, or Mars' Hill.

seasons of the year. This part was conveyed by a subterranean vein to the Athenian harbor of Phalerum. The only access to the fountain was from the citadel, and thus it served as a means for the women to extinguish the fire when they were besieged in the citadel, and drench the persons of their veteran besiegers beneath the wall. It has since served to supply a Greek water-clock and a Turkish mosque. Access to it from the citadel was until lately lost; it was, however, discovered in the year 1822, when both the fountain and the steps leading to it were enclosed by a new bastion projecting from the Propylæa, and returning to abut upon the rock which adjoined it, executed by the Greek chief, Odysseus. Little did he think he was erecting a monument to his own melancholy fate! There, from a window, within less than two years after, was his dead body suspended; he either having destroyed himself or been murdered, after being confined there as a prisoner for several months.

Near the grotto of Apollo and Pan, about sixty yards above the base of the rock, is the cave of Agraulus. This is an opening communicating with a subterranean passage which leads into the centre of the Acropolis, and where soldiers were brought, when first enlisted, to be sworn in.

At the foot of the inclined plane leading down from the Propylæa, in the hollow between the Acropolis and the hill of the Areopagus, called the *Agora*, were the statues of Harmodius and Aristogiton. This was a place particularly honored; and when decreeing statues of their heroes to be placed in the Agora, which was the part of the city appropriated for the erection of public monuments, it was customary, even in the case of the most esteemed of their citizens, to make a special exception against their being placed near these revered representatives of worth.

Near the new bastion, of which we have just spoken, was the temple of Victory. For many ages this temple was lost, and it had almost come to be believed that the descriptions of the ancient topographers were wrong in this respect; but within these

few years, while clearing away the walls of a Turkish fortification, this temple was discovered in almost every detail, and on removing the rubbish of centuries, the wingless figure of Victory was discovered almost entire.

The Agora was the most honorable portion of the ancient city; and beyond it, opposite the western front of the Acropolis, rose the hill of the Areopagus, where sat the highest court of judicature and legislative function in the land. The hill itself was properly called the *Hill of Mars*, and the court of the Areopagi sat on the highest, or northeastern extremity. From this summit was obtained a view of the whole of the city, rich with all the varied splendors of art, and having the magnificent Propylæa and the lofty Acropolis directly before it: and how truly and appropriately strong does the expression of St. Paul appear, when looking down on these memorable idolatrous representations of men, he stood on the Hill of Mars to give an account of the new religion which he preached, and exclaimed, "We ought not to think that the Godhead is like unto gold or silver or stone graven by art and man's device." Alas! how many misconceived evidences of the Godhead at that moment before him mocked the ignorance of their worshippers!

In the middle of the Agora stood the temple of the Winds, one of the most elegant of the buildings of Athens. Its form was octagonal, and on every side was an imaginary representation of the several winds beautifully sculptured.

Immediately opposite the hill of the Areopagus was the place of public assembly, called the Pnyx. This is a semicircular enclosure on the side of the hill, which sloped down to the valley of the Agora. The upper part was enclosed by a natural boundary or perpendicular wall of rock, which ran across the field or space where the people assembled. In the middle of this wall a piece of projecting rock was left, a small platform, with steps on either side for the orators to mount by. This was called the *Bēma*, and from it were delivered the majority of those sub-

lime harangues which will continue a portion of the living literature of mankind so long as language shall endure. Here, in the midst of all that a patriot could hold dear, within sight of every object that could incite or elevate the mind, did Demosthenes pour forth those strains of burning eloquence which ate into the very hearts of his hearers, and made themselves a portion of their very soul. The position of the Pnyx and its Bema supplied abundance of subject and illustration. Beneath his feet was his native earth; below him on every side stood the figures of his country's gods and heroes; before him was the site of its most dignified assemblage; beyond and above frowned the citadel of their strength, enriched with all that arts and arms, devotion and intellect could bring to render it illustrious. Around him was the sea and sky—the hills and dales—the woods and streams of his native land—enough to give him energy beyond that of mortal breath, and put

"E'en sinews within the ribs of death."

At but little distance within the naked ken was the scene of his country's glory—renowned Salamis. Nearer was the Piræus, with its arsenals and busy sails fluttering in the breeze; and before him was a multitude of countless heads, with hearts and spirits subject to his command. Who can wonder that Athenian eloquence blazes with an everlasting light on the page of history!

The connexion of the city with the ports of Piræus, Munychia, and Phalerum, was kept up by what were called the *LONG WALLS*. These were three lines of fortifications, the two longest of which, properly called the Piraic walls, abutted in the city respectively at the Piraic gate and the hill of the Museum. They were strong fortifications of masonry, extending about five miles northeast of the city to the port of the Piræus. There was also a third wall, which terminated at Phalerum, but the two former were what are properly called the *long walls*. The wall which surrounded the city was strengthened at intervals by towers, and there were also towers on the long walls. These latter stood about five hundred and fifty feet from each other; and, when the city was in its greatest prosperity, the space within these walls between the *astu* or upper city and the Piræus was partially filled with houses. The respective names of the three ports are now Drhako instead of Piræus, Stratioliki instead of Munychia, and Phanari instead of Phalerum.

The cemeteries of the city surrounded it on every side, but were most prominent on the north and northwest, where they lay close to the walls. The road from Dipylum to the Academy, which was a short distance from the walls to the northwest, and was the place frequented by the philosopher Plato and his pupils, was lined with the tombs of illustrious men, and near to them were the monuments of those who fell in battle in the service of their country, each being a slab of stone with the name and township of the individual in whose honor it was erected engraved upon it. The tombs on the east side of the city were not so numerous or extensive.

According to Thucydides, the circumference of the city, in the year 431 B. C., was about twenty miles.

THOUGHTS ON SLEEPING.

It is astonishing with how little reflection we resign ourselves to sleep. We speak of death with a feeling of dread almost amounting to abhorrence; and yet to its twin brother, sleep, we yield ourselves up with the most thoughtless and careless levity.

Whether we reflect upon its value or upon the oblivion into which it casts us, sleep should be considered with the utmost attention and seriousness.

As to its value, a single night of the restlessness of sickness, or the watchful agony of fear or sorrow, is amply sufficient to give us a lively idea of that. When unbroken health and undisturbed serenity of mind render sleep the regular and unwooded attendant upon our nights, its value can only be appreciated by due reflection. And to make that reflection is a most solemn and indispensable duty. We should endeavor to imagine, and it is but faintly that we can succeed in doing so, how miserable in body and disturbed in mind we should be, were we deprived of the power to sleep. The reflection will teach us to feel that value for sleep, and that gratitude for our enjoyment of it, which the more thoughtless of our race can only be made to feel by the troublesome contrast of being deprived of it.

When we consider the deep and deathlike oblivion into which we are cast while sleeping, we can not fail to see that the act of resigning ourselves to sleep is one which demands our most serious reflection and most anxious preparation. When we are about to lie down to sleep, we ought to consider that it may be that we shall rise up no more in mortal consciousness. The temporary oblivion of sleep may be the passage to the silence and corruption of the grave. For a change so possible, nay, so probable, and a change so awfully important, we ought to prepare ourselves every night ere we lie down to rest. We *may* wake again, indeed, but we may not. The event is not in our own power or within our own powers of calculation. We ought, therefore, to be prepared for the worst. We ought to lie down in such a frame of mind as though we were certain that, in resigning ourselves to the soothing and stealthy embraces of sleep, we were for ever giving up our mortal existence.

It is not, surely, too much for us to feel grateful for one of the greatest blessings we enjoy, and to feel anxious about one of the most important actions we perform? This gratitude and this anxiety we would endeavor to impress upon the minds of our readers.

FREQUENTLY ask yourself *what* you have done, *why* you have done it, and *how* you have done it. This will teach you to inspect, first, your actions; second, your motives; and third, the manner in which you discharge your duty.

THE moral universe is governed by love and fear, but we should fear God through love—not love him through fear.



The Last Supper.

THE LAST SUPPER.

On the memorable occasion when a bush, burning but unconsumed, appeared to Moses at the back of Horeb, "the mountain of God," he heard the following words—"Put off thy shoes from off thy feet, for the place whereon thou standest is holy ground." The vast circumference around, with the overarching canopy of a cloudless sky, became at once a temple of worship; the level desert was a pavement on which the footsteps of a present Deity were impressed; and the splendor shining from afar, was the repelling yet attracting glory of the Shekinah, which hereafter "dwelt between the cherubim." A moment before it was a dreary solitude—a moment afterward it was a solitude and a desert still; but astonishing as was the outward appearance of blazing light, the moral perceptions and associations of the soul, roused into action by the voice of Jehovah, rather than any merely external vision, converted the whole scene into the magnificent antechamber of heaven, and spread a celestial hue over all creation.

It is even thus, that the more spiritual manifestations of the new testament economy invest with majesty the meanest places, and impart surpassing interest to the simplest exercises of duty and religion. The mind is conscious, through faith, of a miracle of grace and mercy analogous to that which the illustrious Hebrew witnessed, and which by its hallowed associations transforms the wilderness of time into the glorious abode of "the lofty One who inhabiteth eternity." The invisible is rendered visible; the shadowings of great conceptions become realities; and that which is infinite and eternal is brought, as it were, within the precincts of a finite mind.

This idea, susceptible of illustration by many of the observances of religion, is more especially realized in the administration of what is called by way of distinction, *the last Supper*. He who has not felt, in participating its simple elements, the sadness of

sorrow sweetly commingling with the joys of pardon; he whose spirit has not been humbled by remembrances of sin, while it has been refreshed and animated by thoughts of redeeming love; he who has not risen above the sphere of mortal passions and human pleasures, and enjoyed the conscious elevations of a sanctified heart, even amid its self-abasements and mortifications, till it was plain that "the tabernacle of God was with men,"—has never yet kept the supper of the Lord.

The *place* of its original institution suggests a subject of useful reflection; it was in "a large upper room" at Jerusalem, in the house of a man to whom the Savior had commissioned his disciples to go and make the needful preparations for the passover. It is not places that ennoble acts, but acts that ennoble places. Lucian sarcastically remarks of the Egyptians, that in entering one of their temples you would behold a prodigious magnificence of architecture, and in consequence have the mind excited to the highest expectations of the object of worship, when, lo, at the end of the splendid edifice, *an ape* would be seen to invite your adorations! But whatever may be our ideas of heathenism, there must be something ineffably worse than ridiculous to the omniscient observer, in the grandeur and decorations of edifices consecrated to religion, as associated with the mean and sinful passions which too often intermingle with the formalities of Christian worship. Let imagination portray the "upper room" of the primitive sacrament, and see if it do not excel in glory all that the pomp of art could invent for adorning, by its beautiful accordance with the simplicity of that transaction which the Evangelists record. There were no marble pillars supporting the gothic arch and fretted roof; no altar-piece of elaborate workmanship with a sculptured or pictured back-ground to allure the sight; no gaudy-colored window to intercept and modify the light, to aid the effect of sombre shadows upon the senses; no deep-toned organ pealing its sacred

melody along the aisles, and echoing from the lofty building; no costly vestments to impose upon the eye, and attract the reverential gaze of spectators toward mitred and ermined administrators; but there were feeling, solemnity, purity, peace! It was the "guest chamber," befitting the "man of sorrows" with his disciples, harmonizing with the moral greatness that chose for its birthplace the manger of Bethlehem, and held its hallowed festivity at an upper room in Jerusalem.

The *time* of this commemorative feast enhances the interest of it. "In the *evening* he cometh with the twelve." From the course of nature, as well as from the constitution of the mind, it is common for all persons to be conscious of the tranquillizing influence of this closing portion of the day. It is favorable to meditation and supplies it with ample materials. It is the hour for mental repose, and peculiarly suited to concentrated and pious thought, to solemn and sacred purposes. It is then that transactions which have the stamp of heaven and eternity upon them seem peculiarly appropriate; for as the approaching shadows spread their mistiness and obscurity around, the future seems to be absorbing the present, and time appears to be passing the boundary line of the visible and the temporary, and stepping into the invisible and eternal.

But it is not so much the hour itself of this memorable evening, as its associate circumstances, that renders it so solemn and awful. It was a night of crime; "the same night in which he was betrayed;" and the treachery which opened the path to the Redeemer's crucifixion was not perpetrated by a foe who had tracked his steps, and watched his privacy, but by an avowed friend—a disciple, an intimate, a confidential officer of his little household—by Judas Iscariot! Just at the moment when the light of his countenance beamed with inexpressible benignity upon the circle of his chosen ones, and they were sharing the last supper, and participating the tokens of his love, the dark eye of the traitor scowled upon the Son of man, as Satan "looked askance" into the paradise whose happy tenants he planned to destroy; and his darker soul, having "covenanted" with the chief priests for "thirty pieces of silver," was carrying the plot to its awful consummation. Thus were heaven's love and hell's malignity seen in surprising contrast, while the "determinate counsel and foreknowledge" of God counterworked mysteriously the efforts of the "wicked hands" that slew the "holy one and the just."

The *party* convened on this occasion, and the *conversation* that ensued, stamp it with a peculiar and impressive character. Were we to fancy a festive board surrounded with the potentates of the earth, and emblazoned with the insignia of their exalted rank, discussing the affairs of nations, and determining, so far as they could determine, the temporal destinies of mankind,—how intense would be the feeling with which we should read the record of such a convention! With what curiosity would every word be marked, and with what emotions would every proceeding be traced upon the historic page! But this meeting in the "upper room" of the holy city is in-

initely more worthy of record and celebration, and were we not "carnally minded," must be regarded by all generations with sentiments of profounder interest. There sat, in all the majesty of meekness, and in all the glory of "grace and truth," the incarnate Son of God; and there were "the twelve,"—illustrious, not in worldly rank and station, but in the "honor that comes from God!" That wonderful life was now approaching its termination, which was given a ransom for apostate millions, and which, in its benevolence and its revelations of truth and of character, shone upon beclouded man like a gleam of sunshine from the upper heavens: but ere the blessed Jesus left this happy group, and the world where he was about to offer by his death the real atonement for sin, he made himself eminently "known" to the favored few in "breaking of bread." And these were the heroes whom the "Captain of salvation" had destined for the moral conquest of the world, and whose spirits he was now refreshing for the conflict by his presence and promises. The witnesses of his miracles, of the grandeur of his transfiguration, the almost greater grandeur of his humility and sorrows, and subsequently of "decease" which he "accomplished," and the resurrection from the dead which he achieved—were there; and they were thus taught, first, to subdue themselves, to abase and mortify the corrupt passions of their nature, and then to subjugate to the yoke of Christ the rebellious children of men; and with his transferred crown of thorns on his brow, fighting the good fight, to overthrow both human and Satannic usurpations, and win immortal empire for their Lord!

But of the holy and the happy number there was one—and as he partook of the simple meal, he said it, with peremptory solemnity, "Verily I say unto you, that one of you shall betray me." What he uttered they knew must be truth, however inconceivable and inexplicable; and with overwhelming sensations of grief and anxiety they inquired, each one for himself, "Lord, is it I?" Even Judas put the question, as if he doubted, or as if his treason could be concealed; and while he dipped his hand in the dish with him, purposed to dip it in his blood, and received the all-forgiving intimation of his conspiracy and treason, "Thou has said." He then left the assembly—and let him go, and betray the innocent one, and suffer the curse of his crime?—we will turn from the fiendish spectacle, and listen to the converse of the divine sufferer. It needs no comment—let it stand in the perfect narrative of the inspired historian, in the reminiscences to which it invites each humble disciple, and in the gracious promise of the heavenly sacrament which it includes. "And as they were eating, Jesus took bread, and blessed it, and brake it, and gave it to the disciples, and said, Take, eat; this is my body. And he took the cup, and gave thanks, and gave it to them, saying, Drink ye all of it; for this is my blood of the new testament, which is shed for many for the remission of sins. But I say unto you, I will not drink henceforth of this fruit of the vine, until that day when I drink it new with you in my Father's kingdom."

REMARKS ON THE CELEBRATED ENGRAVING OF THE LAST SUPPER.—It is necessary to observe that our engraving has no reference to the real posture which was customary at meals in the time of the Savior, which was reclining. It is merely introduced here as a most striking specimen of the painter's art, and a subject deeply interesting to every Christian. It is believed nothing more acceptable could be given—it calls to our minds one of the most affecting and interesting scenes in the life of our Savior, and is well calculated to excite feelings of the deepest interest.

The celebrated picture of the Last Supper, by Leonardo da Vinci, was commenced as early as the year 1483. Much time was consumed in its composition, and it was not finished in 1497. This admirable effort of talent has been preserved by many ancient copies of great merit.

The moment of time chosen by the artist, will be recollected, is that in which the Savior declared "one of you shall betray me." Bearing this in mind, and looking on the engraving, the figure on the extreme right is that of Bartholomew, rising from his seat and eagerly stretching forward, to hear again from the Savior himself, the words that have filled them all with such horror. Next to him sits James the less, supposed, from an allusion in St. Paul, to have been a cousin of Christ, to whom he is therefore represented as bearing a strong resemblance. He is reaching over to Peter, desiring him to ask John, who sits next to the Savior, who is the traitor? After James, Andrew is placed with a countenance expressing astonishment and all but doubt, that such treason should exist. Notwithstanding his great mildness, the family likeness between himself and his brother Peter is fully marked. Peter follows next. He has crowded behind Judas toward John, to make the inquiry suggested by James. The movement given him, distinguishes the impetuosity of his character. Every limb in his figure and countenance is full of his boldness and decision. We instantly recognise the man, who, a few hours afterward, cut off the ear of the high priest's servant. Peter's movement and his own embarrassment, have pressed Judas forward on the table, so that Leonardo has preserved the exact force of Luke's account of Christ's subsequent words, "The hand of him that betrayeth me is with me on the table." It has been often said that in the person of Judas the painter has preserved a dark and savage expression of countenance, and thrown more into the above than any other in the piece, and can not be mistaken; nor should the little circumstance of his having, through his embarrassment, upset the salt, be overlooked, since in Leonardo's time this was regarded as a very serious omen of evil. To make the effect still stronger by contrast, the head of John follows next, completing the group of three, including Peter. In his countenance we have only unmingled grief. He does not seem to have power left even to fulfil Peter's request, though he leans toward him with the greatest attention, while Peter's decided finger rests on his bosom, pointing him to the Savior for an answer to the question he had asked. The principal has thus

a wider and more free space left. There is no need of describing it. Its devoted purity and unmoved dignity, which is hardly changed by the touch of pity passing over it, forms an inimitable contrast with the heart-rending passions exhibited in the other countenances. In the middle of his head is a seam, or a partition of his hair, after the manner of the Nazarenes (people of Nazareth), his hair plain to his ears, whence downward it is somewhat more curling and waving about his shoulders. His forehead, plain and delicate; his face, without spot or wrinkle; his nose and mouth exactly formed; his beard thick; his look innocent; his eyes gray, clear, and quick; a man of singular beauty, surpassing the children of men. The next sitting figure is James the greater, who being with John and Thomas the chosen friends of Jesus, and with him during his transfiguration in the garden, is rightly placed here, with them next his person. Thomas is the one pressing forward to Jesus behind James, and holding up his finger in a threatening attitude, and this too, is suitable to his character, since he was, after Peter, the boldest and most decided of the disciples, and the most prompt and sudden in his movements. Next to him is Philip, a Nazarite (i. e. a sect who abstain from wine, and wear their heads shaved), again exposing his bosom in testimony of his innocence; and at the end of the table, Matthew, eagerly pointing back to the Savior, is repeating to Thaddeus, who casts an eye of suspicion toward Judas, and to Simon, who seems full of incredulous astonishment at the words of Jesus, which, from their earnestness, they had distinctly heard.

CULTIVATION OF THE CRANBERRY.—Few things are more easily grown than the cranberry, and the cultivation is very simple. Nothing more seems necessary to success than bog or peat earth; if the bogs are sandy, so much the better, but too much wet is fatal to the hopes of an abundant crop. On the sandy coasts of Massachusetts, where wet bogs or meadows abound, the cultivation of the cranberry is increasing, and pieces of ground, hitherto of no value, now yield handsome incomes. It is found they grow well on these sandy bogs after draining, and the following is stated to be the method pursued by Mr. Hall, of Barnstable, who has for some time produced them in large quantities:

"If the bogs are covered with brush it is removed, but it is not necessary to remove the rushes, as the strong roots of the cranberry soon overpower them. It would be well, if previous to planting, the ground could be ploughed; but Captain Hall usually spreads on beach sand, and digs holes four feet asunder each way, the same as for corn; the holes are however deeper. Into these holes sods of cranberry roots are planted, and in the space of three years the whole ground is covered."

Mr. Kenrick remarks, that "although a moist soil is best suited to the plant, yet, with a suitable mixture of bog earth, it will flourish, producing abundant crops, even in any dry soil."



A DAY AT A BOOKBINDERY.

It is a necessary consequence of the connexion existing between different branches of manufacture, that no one of them can receive any notable increase or advancement without benefiting many of the others. Thus, the spur which was given ten or a dozen years ago to popular reading by the establishment of works issued at a small price, and many of them illustrated by wood-engravings, has been the means of inducing changes and eliciting improvements in nearly all the arts connected with publishing:—wood-engraving, paper-making, printing, book-binding—all have been affected by a moving-power which at first sight might appear a trivial one.

The mechanical and social economy of a large bookbinding establishment at the present day are of much interest. Each department is in general appropriated to one class of operations, being under the superintendence of a foreman.

The principal warehouse is where the operations are conducted for binding books in cloth boards, the most prevalent style at the present day. In one part of this room females are engaged in folding the sheets, gathering them into groups, sewing them into the form of a book, &c.; while in other parts are men pursuing the subsequent operations of glueing, pasting, cutting, hammering, pressing, &c., by which the book is brought to a finished state. This is a very busy scene, and one presenting much variety, from the distinct nature of the processes carried on. In many branches of manufacture it is found convenient to locate the workmen according to the kind of labor required; but in bookbinding on a large scale it is found desirable to classify with respect rather to the style in which the book is to be bound,

than to the nature of each individual process. Hence nearly all the workpeople required for binding an extensive order of books in boards are here congregated on one floor. The folding-tables for the folders, the sewing frames for the sewers, and the various benches and presses for the workmen, are the scenes of many remarkable and ingenious processes, of which we shall speak more hereafter.

Most readers are perhaps aware that books bound in "sheep" are less expensive than those bound in "calf;" the leather itself is less costly, and the general style of workmanship less elegant. Hence workmen who are accustomed to one sort of binding are generally employed upon that kind; and hence the preparation of roan-bound books in a workshop different both from that above described and from that devoted to more elegant work. The large room represented by our frontispiece, exhibits females in one department forwarding the earlier operations, and men in another department finishing the volumes.

Among several indications of a well-arranged factory, we noticed one which is always pleasing wherever observed. Many of the superintendents and workpeople appear to have been old standards, to have grown old with the growth of the factory, and to have shared with the proprietors the progress and fluctuation to which all manufactures are subject. This is a feature which we have more than once had occasion to notice in reference to large factories, and is one of considerable importance to the well-being of both the employers and the employed.

Having thus glanced at what we may term the factory-economy of the establishment, let us next endeavor to follow the routine of processes, so far as to give the reader some idea of how a book is built up after it leaves the hands of the printer. We shall

for this purpose classify the various operations in three groups, according as they relate—1, to *making-up* a book; 2, to *covering* a book; and 3, to *decorating* a book. A bookbinder would probably object to this mode of classification; but we think it will meet the wants of the reader better than a more technical mode of arrangement.

1. *Making-up a book.* It must be obvious to all who reflect that a book is printed in large sheets that these sheets must be separately folded and then connected together, before they can assume the form of a book. Each sheet has at the bottom of the first page a letter, figure, or other symbol, called a "signature," intended to assist in arranging sheets properly in the volume.

The printer sends the sheets to the binder (we are speaking of bookbinding on a large scale) in large heaps or groups, arranged in one of two forms; either many copies of one sheet, of ten or twelve successive sheets of one volume, form the group; in the latter case the heap is called a *gathering*, or *quire*; but we will suppose the former to be the case, as it will enable us to speak of the gatherers. The heap of sheets passes to the hands of the *folders*, who are, we believe, almost invariably females. Each folder sits before a flat table or bench, on which she spreads out the sheets in succession. In her right hand she hold a small ivory or bone folding-knife, with which she flattens the foldings of the sheet. Every successive sheet of the group is folded in precisely the same way as that which preceded it, so that no particular skill is required in adapting the various sheets one to another; but the folding is nevertheless a process requiring much accuracy, especially in the finer kinds of binding, as the sheet is folded so as to make the top and bottom lines of the print range, without reference to the edge of the paper. The sheet is placed with the signature toward the left hand of the folder, on the under surface; and the foldings are more or less numerous according as the book is folio, quarto, octavo, 12mo, 18mo, 24mo, 32mo, &c., terms which relate to the number of printed pages in one sheet.

Supposing a group of signature A to be thus folded, another of signature B, and others, to the extent required for the volume, these will have to be "gathered" into volumes at the next process. This gathering is simply breaking up the groups hitherto existing, and rearranging the same sheets in the order necessary for the volume. Instead, for instance, of having twenty copies of one sheet, such as that with the signature A, one of A is taken, then one of B, then one of C, and so one, until there are as many groups as volumes, and each group containing the sheets for one volume.

The "collater" now takes the group of sheets in hand and examines them to see that they occur in proper order, that no duplicates occur, that no sheet is wanting, that the folding is correct, &c. This is a process in which much expertness is shown. The group is bent at one corner, and the sheets allowed to spring back successively, leaving to the eye just sufficient time to catch the signature at the bottom of the first page of each. If these signatures occur

regularly, according to the letters A, B, C, &c., or the figures 1, 2, 3, &c., or any prescribed combination of both, then the arrangement is correct; if not, any error is immediately adjusted.

When the book of loose sheets has been thus made up, the sheets are beaten or pressed, according as the work is to be "in boards" or "bound." It is well known that a bound book is more dense and compact than one in boards, and this difference is mainly due to the process immediately preceding the sewing. Until recent times the sheets were separated into small groups, called "sections" or "beatings," and beaten with a heavy hammer till greatly compressed; but modern invention has marked out a much more effective mode of proceeding. The *rolling-press* is a machine in which two rollers, worked by hand, are made to rotate nearly in contact; a man places a small number of folded sheets between two tin plates, and passes them between the rollers, on the other side of which they are received by a boy, who places the pressed sheets in heaps, and returns the tin plates to the man. Independent of the saving of time and of muscular exertion, the rolling-press is found to be more efficacious than the hammer in producing less "set-off," or transference of ink from one page to another.

The sheets are placed for a short time in a standing-press, and are then again *collated*, to see that no disarrangement has occurred; any plates, too, which may be interspersed among the text, are now inserted. The *sewer* now sews the sheets to strings or bands at the back; but if the strings are to be rendered invisible, a *saw-mark* is made for the reception of each. The group of sheets is fixed tightly in a press, with the back edges uppermost, and a few shallow cuts are made with a saw, at right angles with the length of the book.

A *sewing-press* consists of a flat bed or board, from which rise two end-bars, connected at the top by a cross-bar. Three or more strings, according to the



Sewing-machine.

size of the book, are fastened by loops to the cross-bar, and are tightened down by a simple contrivance at the lower end. The sewer, seated somewhat obliquely in front of this machine, with her left arm passing round the left vertical bar (as seen in the annexed cut), proceeds to sew the various sheets to the bands, her left hand being behind the strings, and her right hand before. Each successive sheet is laid flat on the bed of the sewing-press, with the back edge in contact with the strings, then opened in the middle, and fastened to the strings by passing a threaded needle backward and forward through the central fold of the sheet; each thread after passing from the inside to the out, being made to loop or twist round one of the strings before entering the sheet again. As soon as one sheet is fastened to all the strings, another is laid down on it, and fastened in a similar manner. A curious kind of stitch called a "kettle-stitch," is made near the top and bottom of the book, as a means of allowing the thread to pass on from one sheet to another. Nonprofessional readers may be sorely puzzled to know what "kettle-stitch" means; but we can only say that it is supposed by some to be a corruption of "catch" or "ketch" stitch, while others refer it to "chain" stitch. Those who would attempt to trace the etymology of technical terms and phrases would soon find themselves in a sea of mystery both wide and deep.

The operation of sewing is conducted with great rapidity, since a female can sew two or three thousand sheets a day. Many modifications of the process occur, according to the size of the book and the style of binding. Thus, the number of strings may be from two to five; or instead of strings, strips of vellum or of parchment are sometimes used. In some cases the needle passes through eight thicknesses of paper, in others six, in others four, in others two; according to the size of the sheet, the number of pages in it, and the mode in which the pages are arranged. It is a fortunate circumstance, considering the very limited number of employments for females in this country, that there are several departments of bookbinding within the scope of their ability. The greater part of that which has hitherto engaged our attention is intrusted to females; and in a large book-binding establishment employment is thus afforded to a considerable number. At Mr. Walker's bindery in this city, for instance, in busy seasons, employment is afforded to about fifty females, whose weekly earnings vary from \$2.50 to \$7.50, in proportion to the facilities they possess for their respective duties; or their increased personal application. Much in this department is achieved by a judicious mode of systematizing, verifying the old adage, "work well managed is half done."

While speaking of making-up a book, we must remark that caoutchouc or India-rubber binding requires no sewing. The sheet is cut into separate leaves, and these leaves are retained solely by a cement of caoutchouc applied to their hinder edges. The leaves are allowed to assume a round contour at the back-edge by placing them in a kind of mould or gauge shaped for the purpose; they are then rasped, to give a slight roughness for retaining the caoutchouc after-

ward applied. A flexibility is produced by this kind of binding, greater than can be presented by a sewed book; while at the same time the caoutchouc cement is so retentive as to bind every single leaf firmly. This new mode of binding was introduced a few years ago, and is valuable for many kinds of volumes.

2. *Covering a Book.* We have now made up the sheets into the form of a book, and have connected them together. Whether the volume is in elegant "calf-extra," or "Russia-extra," or whether it is a roan-bound school-book, or a "boarded" book, the sheets are brought together in some such mode as we have attempted to describe above. Here then we shall commence the second of the three sections into which we have thought it proper to classify the operations. The "cover" of a book, in bookbinders' phraseology, is the piece of leather or of cloth which envelopes the millboard; but the reader of a book, when he speaks of its cover, gives the term a much more extensive application. We must therefore at once explain that the leather or cloth is called the *cover*, the stiffening substance within is the *board*, and both taken collectively the *case*.

When the book is taken from the sewing-press, an inch or two of each string is left hanging to it; these are afterward either scraped so thin as to be but little conspicuous, or are employed for fastening the book to its case. The back of the book—that is, the assembled back-edges of all the sheets—is glued, to increase the bond by which they are held together. When the book has gone through one or two other minor processes, that one succeeds which is perhaps as remarkable as anything displayed in bookbinding; viz. rounding the back and hollowing the front. Most



Rounding the back of a book.

persons can understand the production of a square back and edge to a book; but the graceful convexity of the one and concavity of the other, in most books bound in the modern style, are as curious in the mode of production as they are pleasing in appearance. In the process of "backing," by which this effect is pro-

duced, the book is laid on a bench, held or pressed by the left hand of the workman, as shown in the cut, and hammered near the back edge, with such a peculiar movement of the left hand as causes the back to become rounded while the hammering proceeds. The effect is so instantaneous that a looker-on scarcely knows how or when it is produced. The state of the back is such as to enable the sheets to yield to the rounding action of the hammer, being coated with glue not yet dried; and the subsequent drying of the glue retains the sheets permanently in the position which they thus acquire.

It may perhaps have occurred to many a reader, that, as the board of a book is frequently of considerable thickness, it is likely to project beyond the back and to form a stiff and inconvenient hinge. This is prevented by a very simple contrivance, adopted at the time when the book is "backed." It is placed between two pieces of plank called "backing-boards," the hinder edges of which are placed precisely where the two hinges of the book are to come. The book with the boards thus placed, is then squeezed tightly in a press with the back edge uppermost; and the back being thus again hammered in a round form, a portion of edge projects over the boards, so as to form a kind of groove into which the millboard may afterward conveniently be adjusted.

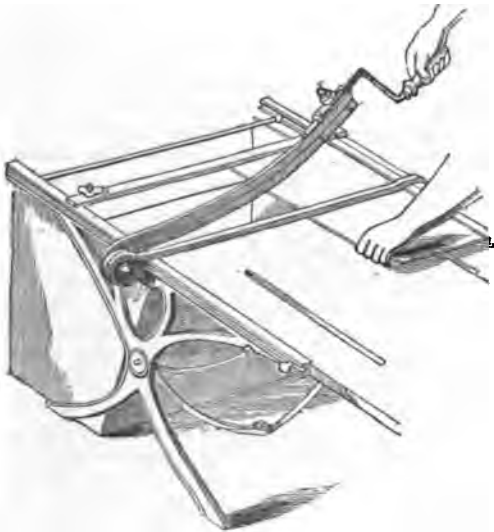
The reader will bear in mind that the edges of the book are all this time rough and uneven; but the time has now come when these edges must be brought to the level and smooth surface which adds so much to the beauty of a book. There are a few minor processes carried on about this time; but the plan of our article requires that we should notice only those of most prominent importance. In former times the edges were cut in a most clumsy and rude manner by means of shears, one blade being fixed to a bench, and the other being moved by the right hand of the workman while his left hand held the book, and thus the leaves were cut a few at a time. The cutting of the edges was partly effected by this method, and partly by drawing the edge of a sharp knife along the leaves, guided by the edge of a board. The "cutting press" of the present day is however a much more effective arrangement. The book, after being properly adjusted between two boards, is screwed in a press, with one of the ends projecting a little above the level of the bench. The ends of all the leaves are then cut off while in this position, by means of an instrument called a "plough," the cutting edge of which, in its mode of action, is midway between that of a pointed knife and a plane-iron. The edges are all cut to a perfect level; and the book being reversed, the other end is similarly treated. But by far the most remarkable part of the process is that by which the concave front edge is brought to such a regular curve. Most persons who have thought of the matter at all may have conceived that this concavity is produced by scooping out a portion with a gouge; and indeed the circumstance of the concavity of the front edge being just the same in degree as the convexity of the back has given rise to many sage conjectures wholly wide of the truth. The glue with which the back of the book had previously

been coated is so far softened as to suffer the bands and the back edges of the sheets to yield to pressure; and this is followed by an operation which makes a stranger fear that the round of the back is destroyed for ever. The workman takes the book in his hand, front edge uppermost, and strikes the back forcibly against the bench; thus transforming the round back into a square back. Then, inserting two pieces of sheet iron four inches by one, called trindles, between the book and the boards at each end to keep the sheets in this position, he fixes the book in the cutting-press, and cuts the front edge in precisely the same way as the top and bottom; thus making all the edges perfectly square, and all the leaves perfectly equal in size. The most remarkable part of the operation then succeeds; for immediately on removing the trindles from the book, the whole of the leaves spring back to their former position, that is, convex at the back edge; and the slightest consideration of the nature of curvature will make it manifest that, as all the leaves are made perfectly equal in the cutting-press, a convexity at one edge must be accompanied by an equal concavity at the other. Hence is produced the hollow or "gutter" of the front edge.

In this, as in other parts of bookbinding, the process is modified to suit different circumstances. Books in boards are either not cut at all at the edges, or are only partially cut; while bound books are carefully cut at top, bottom, and front edges.

We next turn our attention to the boards, which are permanently attached to the books in different stages of its progress toward completion, according to the nature of the binding. Millboard, the stiff substance of which the sides of books are formed, is a thick pasteboard composed of many parallel layers, glued or pasted together, and pressed in a mill to make them dense and smooth. The sheets are of various sizes and thicknesses, according to the size of book for which they are required; and the book-binder sometimes glues two together, to produce a board of double thickness. From the large sheets the smaller pieces are cut to form the sides of the books. In the first place, a pattern-piece, or size-pattern, is prepared, having the exact size and form of the boards to be cut. The cutting-machine is then adjusted to these dimensions, by causing an edged instrument, analogous to a scissor-blade, to work at a certain distance from a groove or raised ledge, against which the edge of the board is placed. The actual cutting is effected as here represented, on the same principle as by a pair of shears; but the arrangement of the machine enables the pieces to be cut with perfect accuracy, both as to size and to rectangular form.

The boards are cut by the same machine, whatever may be the department of the factory where they are to be used; but the period of adjusting them to the book depends on circumstances which we may now explain. If a book is put into "cloth boards," or is "bound in cloth," the cloth cover is attached to the boards before the latter are attached to the book; but if the book is "bound" or "half-bound" in leather, the boards are first attached to the book by means of the strings, and the leather cover is pasted on af-



Board-cutting Machine.

terward. In the one instance, the cloth is cut from the rolls to the required size in the cloth-warehouse, and handed over to the "cloth-case maker;" in the other, the leather is cut from the skins in the leather-warehouse, and consigned either to the binders or to the embossers.

A boarded book is attached to its covers almost entirely by the boards being pasted to the blank leaves, or "end-papers," placed by the binder at the beginning and end of the book. The "cloth case" is first prepared by pasting the cloth upon the boards, placed sufficiently wide apart to allow for the thickness of the book; and the case, thus made, is attached to the book by the back of the book being covered with stout linen and afterward fastened to the case; the end-papers are then glued to the boards.

In a bound book, however, the process is different, and more carefully conducted. The boards being adjusted to the proper sizes, the back of the book rounded, the edges cut, holes made through the boards opposite to the strings, and the strings of the proper length, the boards are fastened to the book by passing the ends of the strings through the holes and pasting them down. The "hollowness" in the backs of some books depends on a cause independent of the fastening of the bands or strings. If we open a "hollow-backed" book, we shall see that the leather or cloth cover springs away from the back edge of the sheets; whereas other books appear to have the leather firmly attached thereto. This difference arises simply from the interposition of a doubled layer of paper or cloth between the leather and the back of the sheets: this layer helps to strengthen the book, and, at the same time, admits of the back being made close or hollow, according as the two layers of paper are or are not made to adhere together. If we suppose a hollow cylinder of paper to be pressed flat, and one side pasted to the back edge of the sheets, while the leather cover is pasted to the other side, we shall have some idea of the nature of a "hollow back."

When a book, attached to its boards by means of the bands, is ready to receive the leather covering, the leather is cut to the required size, allowing about half an inch all round for paring and turning in. The edge is pared or cut away obliquely with a keen knife, to prevent the unseemly projection which would otherwise result. If it is to receive any of those decorations which add so much to the external beauty of a book, the imprinting of the devices is done partly before and partly after the leather is attached to the book, as we shall explain further on. But the mode of pasting the cover on the book is the same in both cases. The leather is laid smooth with the face downward, and the back surface well coated with paste. The workman then takes the book in his hands, laying the back evenly in the middle of the leather, and draws and smooths and works the latter until it adheres closely to the back and boards of the book. This is a process of very great nicety; for not only must the more obvious parts of the surface be closely covered, but the overlapping edges, the turning-in, the corners, &c., must all be finished with great exactness; or the book will be at once spoiled. It is one of those operations, so frequent in manufactures, wherein success depends on a nicety of manipulation, as incapable of being described as of being imitated without long practice.

There is one little appendage which we may notice here, viz., the *head-band*. Every one is familiar with the fact that his bible has a little band or edging of silk at the top edge, where the paper joins the covers. This head-band is partly for service and partly for appearance; it helps to sustain the leather at the back of the book at the same level as the boards; and it gives a neat finish where slight imperfections might be otherwise visible. The better kinds of head-bands are formed of little strips of vellum or pasteboard, with colored silk twisted over and around them in the process of fixing them to the book; while the commoner kinds consist of a cord inserted in a doubled piece of colored silk or cotton cloth. We may also here mention the "raised bands" which are sometimes used for ornament in the better kinds of books; they consist of little strips of leather or cord pasted across the back of the book before it is covered, and afterward stamped and gilt so as to contribute to the beauty of the volume.

3. *Decorating a Book.*—We have glanced through the more prominent operations by which the book is made to assume its compact, convenient, and durable form; omitting mention of many slighter manipulations which would neither suit our limits nor be intelligible to general readers. There is, however, a wide difference between a book thus prepared and as given in a finished state from the hands of the book-binder. The edges of the leaves are cut; but they are white, neither colored nor gilt: the boards are covered with cloth or with leather; but neither cloth nor leather is embossed or stamped, or gilt or lettered. As these adornments are subsidiary to the formation of the book itself, we have thought it better to group them by themselves, whether they are done before or after the cover is laid on the book.

First, then, for the edges. The majority of cut-

edged books are treated in one of two ways—*sprinkled* or *gilt*; the first being the most general method for bound books; and the second for bibles, prayer-books, annuals, and the higher class of bound books. The sprinkling is a singular process, and one which differs greatly from the idea which many have formed of the matter. The edges of the majority of bound books present a speckled appearance, arising from a colored liquid or paint being laid irregularly over them; and the peculiarity consists in the mode of producing the small spots. The color is laid on, not with a brush, as in painting, but by the following contrivance: A set of books, to be sprinkled of one color, are ranged side by side on a bench, in a recess shielded from other parts of the factory. A color is mixed up, of umber, Venetian red, or any other cheap pigment, with water and paste or size; into this the workman dips a large brush, and then strikes the handle or root of the brush against a stick held in the other hand at a height of two or three feet above the books: the action is so governed as to cause a shower of spots to fall on the edges of the books; which spots are not so thickly congregated as to cover the whole surface, and are yet such as to have an equable appearance when finished. The mode of handling the brush is obviously the point on which the success of the process hinges. Some books have the edges *marbled*, instead of *sprinkled*; this is done in a manner similar to that observed in making *marbled-paper*, and is the work of a separate class of men.

The operation of gilding the edges of books is one which illustrates in a striking manner the dense and compact form into which the leaves of a book are brought by pressing and binding. The edge of a well-bound bible presents a fine, smooth, glossy, and brilliant surface, so equable and uniform as to render the distinct leaves almost invisible; yet these leaves can be parted as easily as if their edges were not gilt, and each edge presents its fine and delicately-marked line of gold. Were not the leaves pressed together as compactly as a mass of wood, this effect could not be produced.

There is in the process of gilding edges, as well as that of cutting them, a necessity that the front and back of the book should be brought perfectly square before the operation. The leaf-gold could not be bent into the curvature of the "gutter" if this were not temporarily made flat: the book is therefore brought to the required form (while the case or cover is yet in an unfinished state), held tightly in a press, and the edges scraped smooth with a straight-edged piece of steel, to remove all asperities left by the cutting-plough. The edge is then coated with a liquid composition of red chalk and water; and, while this is setting or partially drying, the gilding-tools are being prepared. The leaf-gold is blown out from the book in which it is sold by the goldbeater, upon a cushion covered with leather, where it is placed out smooth by the aid of a knife. Each leaf is then cut up into two or more pieces, according to the size and thickness of the book whose edge is to be gilt. On the work-bench is a cup containing white of egg beaten up with water, a little of which is laid, by

means of a camel-hair pencil, on the still damp surface of chalk and water. The gold is then taken up, piece after piece, by a flat camel-hair brush, and laid on the book-edge. This is done to all the three edges in succession; the book being turned round in the press to bring the successive edges uppermost. After the lapse of a very few minutes, the gold has become sufficiently dry and set for polishing, a process which would seem calculated rather to rub off every atom of gold than to polish it. The workman holds in his two hands a long-handled burnisher, at the lower end of which is fixed a very smooth straight-edged piece of hard stone; this he places on the gilt surface, and, with his left elbow resting on the work-bench, and the handle of the burnisher resting on his right shoulder, he rubs the gold with great force at right angles to the direction of the leaves. No gold is rubbed off, but the whole is brought to a high degree of polish; the compactness of the leaves being such as to allow no chalk-color or egg or gold to penetrate between them. If the burnisher were worked in the direction of the leaves, the polish would not be so high. The boards of the book are during these processes turned back as far as possible; and when the gilding is completed, paper is wrapped round the gilt edges to prevent the gold from being soiled in the subsequent finishing of the book.

The covers of books are decorated in a greater variety of ways than the edges. Roan-bound school-books are sometimes "marbled" outside; a process which bears some resemblance to the sprinkling of the edges. A liquid composition of copperas, potash, water, and any common coloring substance, such as umber, is made. The books are opened, and hung over two bars, so that the boards may be nearly horizontal, and the leaves hang vertically downward. The liquid color is then dashed on somewhat in the way before explained, so as to cover the back and sides of the book; the spots or splashes being larger or smaller, according to the mode in which the brush is handled.

A mode of improving the appearance of morocco leather for the covers of books is not a little striking. Whoever compares the appearance of a piece of morocco in a slipper or chair-cover with that presented by a well-bound book, will perceive that the former has a series of irregular lines or grooves: whereas the latter has a regular granulated appearance. We have now to describe the simple contrivance by which the wrinkled appearance of morocco leather is removed. The leather is first wetted and laid on a bench. The workman fastens to the palm of his right hand, by means of a strap passing over the hand, a large flat piece of cork. Then doubling one portion of the leather over another, so as to bring two surfaces into contact, he gently rubs the upper fold of leather to and fro with the piece of cork; varying the extent and position of the doubling, and the direction of rubbing, so as to let every part of the surface be rubbed against some other part. The effect is very marked; for not only are all the wrinkles removed, but they are replaced by a kind of granulated surface, consisting of a uniform series of

minute raised spots. When the leather has been allowed to dry, it retains this texture permanently, and is then applied to the covering of books.

The cotton-cloth with which so large a number of new books are now covered has an ornamental character given to it in three different ways, either before or after it is applied to the boards of the book. One of these is the imprinting, all over the cloth, of a small and uniform pattern calculated to hide the barrenness and stiff uniformity of the threads in the cloth. If the reader has an opportunity of inspecting the backs of many cloth-bound books, he will see that there are a great variety of patterns thus given to the cloth. This process is done by a separate establishment, with the aid of cylinder machines, having the various patterns engraved on the rollers, which rotate in contact, through which the muslin is passed to receive the embossed impression. By a very ingenious contrivance, a row of small jets of gas is carried through the interior of the lower cylinder, by which it becomes heated throughout. Every kind of stamping or embossing in leather or cloth is more effectively performed when aided by heat, and it is to afford this heat that the gas-jets are employed. The second machine, on the same principle, is to impress particular designs of which a large quantity may be required. The piece of cotton-cloth, many yards in length, is inserted between the cylinders by its extreme end, and is then, by the action of the machine, drawn regularly between them, receiving its impress as it passes.

The embossing-presses act on a different principle. The device is in this case engraved on a flat thick plate of steel or gun-metal, which is stamped down upon the leather or cloth. These are of immense power; indeed, one of them exerts a pressure of no less than *fifty tons*. The mode of using is simply thus: The cover, or the case for a book is laid flat on a tablet or bed heated with gas from beneath, or else on a counter-die similar to that by which it is to be impressed. The engraved plate (which is in "intaglio," like a seal, but not so deep) is fixed to the press with its face downward, and, by steam applied to a crank, it is brought down upon the cover with such force as to impart its device to the leather or cloth, the device being of course raised, or in bas-relief, like a "cameo." There are some instances in which the embossing is done to the leather or cloth *before*, and in others *after* the cover is pasted to the boards; but the action of the machines and the nature of the device are the same in either case. The large embossing-press here represented, with its powerful fly-wheels and

togle-joint, the ingenious arrangement for heating the lower bed, is perhaps the most note-worthy machine in the factory.

When we compare a cloth-bound book, or the cheap embossed-roan bibles now so much used, with an elegant morocco- or russia-bound book, we see that the ornamental devices are raised above the common surface in the former case, and levelled below it in the latter. Hence a very different system of working is required. The name of *blocking* is given to the operation whereby the depressed device is given. This is either effected by a number of punches and other small tools used by hand, or by means of a small blocking-press. In the "extra-finishing" shop, a name given to the shop where the higher class of books receive their ornamental devices, are several tripods or standing frames, which act as gas-stoves. A jet of gas is so placed as to heat a central compartment, into or against which the tools are placed, whether for lettering or ornamenting, whereby the blocking, or rather "tooling," is effected. Sometimes the depressed device is not coated with gold, in which case it is called "blind-tooling;" in others, gold is laid on the book, and then stamped down with the heated tool. The workman has a vast number of tools, such as rounds, squares, points, scrolls, diamonds, lines, letters, &c., the combination of which, according to the taste which he is enabled to display, produces a pattern. The book is laid on a bench, with its back or sides uppermost, according to the part under operation, and the workman presses the heated tools down on the level surface, leaving a device which is at once depressed and polished. In large or elaborate devices, he has a paper pattern for his guidance.

When the device is to be a gilt one, the leather requires certain preparatory processes to fit it to retain the gold. It is first coated with size, then two or three times with white of egg, and lastly slightly touched with a piece of oiled cotton at the time the gold is laid on. The gold is laid on in slips of greater or lesser size, according to the pattern; and the heated tools are immediately impressed on it, whereby the gold is made to adhere permanently to the leather. The loose or superfluous gold is then wiped off with a rag—which rag, we may remark, becomes an article of no small value in the course of time.

All that we have here said of ornamental devices applies equally to the lettering of a book. Where, however, it may be done conveniently, the punches or small devices, instead of being fixed in handles and used singly, are fixed, by means of glue and cloth, to a metallic plate, and thus impressed on the book at one blow by a press. This is then called "blocking." In the "blocking-shop" are drawers and boxes filled with various small devices in brass, which the workman combines according to his taste, and fixes to a flat block or plate. The plate is attached to the upper bed of a press, heated by means of gas within; and the case of the book being introduced beneath, the block is let down on it, and imprints the device, whether it be gilt or "blind." Where a fillet, or line, or running sprig forms part of



Embossing-Machine.

the ornament on the back, sides, or edge of a book, it is frequently done by a wheel or "roll" in the manner here represented. The edge or periphery of the wheel has the device in relief, and this, being wheeled along carefully over the surface of the book, leaves a corresponding depression.



"Extra-Finisher" at work.

Such are the principal modes by which a book is decorated. We have been able merely to give a type or general representation of each, and must necessarily pass over minuter shades of operation. The costly bindings in velvet and silk, the gold and silver clasps of expensive bibles, and all the niceties which the connoisseur in bookbinding regards with such an admiring eye, we must pass over in silence.

It remains only for us to acknowledge the courtesy of Mr. E. Walker, of this city, who has furnished us with many particulars in this brief sketch; and we can not conclude without again bearing testimony to the excellent moral effects that the manner in which his establishment is conducted produces upon the persons of both sexes who are in his employ.

MAY.—By G. P. DISOSWAY.

"Winter still lingering on the verge of Spring,
Retires reluctant, and from time to time
Looks back, while at his keen and chilling breath
Fair Flora sickens."

LINES, wherever quoted, beautiful and striking. Nature seeks repose in winter, but it is only to collect, new strength, which is already silently and secretly preparing another creation. What mercies do

we discover even in the rains, thick clouds, and vapors of this inclement month! If the heavens were like brass, and the earth iron, all plants and trees would perish, and all living creatures would faint and die. Every shower enriches the earth, and affords fresh proof of the divine goodness; the snow itself not only preserves the ground from the severity of the cold; but, by the saline particles with which it is impregnated, also aids much in enriching the soil. These particles are the *nitre* which everywhere disperses itself throughout the air, and freezes with other vapors floating in the atmosphere.

Still, however, the vegetable world appears silent and dead, and did we not remember the former year, and know that nature had created like productions, we could scarcely anticipate a new leaf or flower. But there is even a beauty in the leafless forests, as they stand majestically delineated upon the winter sky. There is instruction too; select a single tree, and, lifeless as it is to all appearance, upon minute examination, it becomes a storehouse of natural history, the safe depository of a great amount and variety of progressive being.

Naturalists do not agree as to the precise point of vitality, but there is such a point, and although the bud may not equal in size a pin's head, or a needle's point, it contains the perfect tree, and will soon spring up to beauty and perfection like its parent. We need not speak of the flowers and fruit, for they attract everybody's attention; but is it not a most wonderful fact, that these dark twigs and branches, now apparently so much alike, will shortly be clothed in all the endless varieties of beauty and fragrance, and adorned with the most brilliant colors, from the purest white to the brightest scarlet? And, stranger yet, they will all come with as perfect certainty from their proper trees as the changes of the season arrive.

Every bud, too, shelters some insect, which will awaken in the coming spring; every chink in the bark has its inhabitant. Only examine the soft heart of some hollow tree, and you will discover innumerable cells, drilled through and through by the larva of beetles, in some species of which the teeth come to perfection before any other part; so that the instant they are extracted from the shell they can nourish themselves with the decayed wood. The water also, and, for aught we know, the ice and snow contain myriads of the tiny race, ready to come into active existence when the temperature awakens them from their slumbers. A powerful magnifier has discovered innumerable *animalcules* in rain water, and some of them many thousands of times smaller than a grain of sand. We greatly err if we imagine that winter destroys those insects, or the birds, millions of whom live and move during the summer in the air, earth, or water. Providence takes care that none of them shall perish, reanimating them when the genial heat of spring penetrates their secret abodes.

As subjects for study, however, to my own mind, we have nothing equal to trees and other vegetables. We find them *everywhere*, and at *all seasons*; they stand still, and thus we can watch the earliest seed until the majestic oak is produced, the monarch of a thousand years' growth.

Cheerless and dreary as is the surrounding prospect, the vegetable kingdom is silently and secretly at work, by night and by day. The *germe* of the seed now deposited in the earth swells, and will soon spring up, the blossoms grow larger, the buds open, and the flowers become visible. These revolutions may well excite our astonishment and admiration, and are caused by the breath of the Most High, felt and universally extended through the rays of the sun, the great source of life, sensation, and joy. His approach reanimates all creation. Not a solitary plant would adorn our earth without this influence, nor is there a tint upon a single flower but what is pencilled by the brilliant orb of day. Without this same action no creature could come into being; and were it possible for us to conceive the earth that we inhabit to be deprived of this luminary, all, all would be silence, oblivion, and death. Suspend its warming and illuminating operations but for a single day, or even a single moment, the life and beauty of our globe would be destroyed, beyond recovery, dead, dark, and cold! So in the spiritual world, we may strikingly add, if the rays of the blessed Sun of Righteousness were to abandon the human mind, spiritual death of the most fearful description would follow—we can only be safe in the free grace of a bountiful Redeemer.

The earliest vital function in trees is the *ascent of the sap*, which always rises through the alburnum, or sap-wood, as soon as the frost has abated. Thus the circulation of this fluid becomes as absolutely necessary for the growth of plants as blood is for the life of animals; and God has wonderfully adjusted all the parts of vegetables, so as carefully to preserve and circulate this nutritious juice. It ascends through fibres closely united, which run from the root to the top, extending through all the branches, and imparts nourishment to the new buds; and some of them are so fine, that a single one, scarce larger than a hair, contains over eight thousand of these little tubes! During the heat of the day the sap rises by means of these ascending pores, but returns again by descending ones in the cool of the evening. This annual circulation forms also the bark of plants, which often contains just as many layers as the tree is old; and the virtues of plants, too, chiefly reside in their bark.

In this section there is scarcely any appearance of spring, but in the southern regions of our favored land, extending as it does over so many latitudes, have these genial influences already appeared, in the revival of universal nature. Early in the month of February, in Florida, have I gathered violets, the snow-drop, and the delicious jessamine, those

"Sweet children of the early year."

Radishes and oranges were on the table, raspberries, peaches, and strawberries in full bloom, and asparagus with peas "up." The elder, sassafras, and maple, unfolded their young leaves; while in gardens the pomegranate, oleander, roses, hyacinths, narcissus, and other bulbs, flowered in all their beauties of fragrance and of color. Above and below were indications that the vernal season was busily preparing her

annual banquet, in the moistened earth, the beautiful clouds, the clear and gentle breeze, and in the gorgeous sunsets. Daily and carefully I noted the thermometer; it did not average over 60°, so mild and invigorating was the climate in often our severest month. Upon warm mornings I have heard the groves made joyful with the vocal melodies of the children of song, hibernating as they do in countless flocks to these tropical woods and everglades, where they find sunny days, bright skies, and green trees. Often have I thus early indulged in a solitary ramble amid these native forests of our continent, and O, how refreshing to mind and body! Those walks and hours will not soon be forgotten.

"In the wide desert, where the view was large,
Pleasant were many scenes, but most to me
The solitude of vast extent, untouched
By hand of art, where nature sowed herself,
And reaped her crops,—whose garments were the clouds;
Whose minstrels, brooks; whose lamps, the moon and stars;
Whose banquets, morning dews; whose heroes, storms;
Whose warriors, mighty winds; whose lovers, flowers;
Whose orators, the thunderbolts of God;
Whose palaces, the everlasting hills;
Whose ceiling, heaven's unfathomable blue;
And from whose rocky turrets, battled high,
Prospect immense spread out on all sides round,
—Most fit was such a place for musing men."—POLLOCK.

New York, April, 1843.

BOUNDLESSNESS OF THE CREATION.—About the time of the invention of the telescope, another instrument was formed, which laid open a scene no less wonderful, and rewarded the inquisitive spirit of man. This was the microscope. The one led me to see a system in every star; the other leads me to see a world in every atom. The one taught me that this mighty globe, with the whole burden of its people and its countries, is but a grain of sand on the high field of immensity; the other teaches me that every grain of sand may harbor within it the tribes and families of a busy population. The one told me of the insignificance of the world I tread upon. The other redeems it from all insignificance; for it tells me that in the leaves of every forest, and in the flowers of every garden, and in the waters of every rivulet, there are worlds teeming with life, and numberless are the glories of the firmament. The one has suggested to me, that beyond and above all that is visible to man, there may be fields of creation which sweep immeasurably along, and carry the impress of the Almighty's hand to the remotest scenes of the universe; the other suggests to me, that within and beyond all that minuteness which the aided eye of man has been able to explore, there may be a region of invisible; and that, could we draw aside the mysterious curtain which shrouds it from our senses, we might see a theatre of as many wonders as astronomers have unfolded, a universe within the compass of a point so small as to chide all the powers of the microscope, but where the wonder-working God finds room for all his attributes, where he can raise another mechanism of worlds, and fill and animate the evidence of his glory.—CHALMERS.



W. Carey.

Professor of Oriental Languages in the College of Fort William, Calcutta, &c., &c.

THE REV. DR. CAREY.

WILLIAM CAREY was born at the village of Paulerspury, about three miles from Towcester, in Northamptonshire, on the 17th of August, 1761. His father was clerk of the parish, and kept a small free-school in the village, in which he gave his son an ordinary English education.*

* In this school his son was a pupil, and distinguished himself by diligent attention to its limited round of instruction, especially to the study of arithmetic. Such was his fondness for this pursuit, that, before he was six years old, his mother used to hear him casting accounts at night when in bed, and the rest of the family were asleep. Even at this early age he showed that spirit of persevering diligence which distinguished him throughout life. Whatever he began, he finished; difficulties never seemed to discourage his mind, and, as he grew up, his thirst for knowledge increased.

27

In the year 1783, he was publicly baptized at Northampton, in the river Nen, by the late Dr. Ryland, which led to his settlement, in 1786, as pastor of the small Baptist church at Moulton, near that town.

To say nothing of natural history, which, from his childhood, had been a favorite pursuit, he found means, amid all his indigence and obscurity, to attain no small acquaintance with languages, both ancient and modern. The precise extent of his acquirements at this period, it is now difficult, if not impossible, to

The review of the life of this great man would form a profitable incentive and encouragement to ingenuous and intelligent youth—especially to those who have to contend, as he had, with the disadvantages of an humble condition in society.

ascertain, but it appears certain that he was able, before he left England for India, to read his Bible in at least *seven* languages, including his native tongue.

In the year 1787, Mr. Carey, having been invited to become pastor of the Baptist church at Leicester, removed thither, and entered on his new charge early in the following year. In this more public station, his zeal and unremitted labors endeared him to men of piety, while his eager pursuit of learning attracted the notice and secured the respect of all who could appreciate true worth and intellectual vigor. Among these, the Rev. Thomas Robinson, for many years the useful and exemplary vicar of St. Mary's in that town, treated him with peculiar kindness, gave him free access to his library, and thus laid the foundations of a friendship, equally honorable to both parties, which subsisted till the death of Mr. Robinson.

Previously to the entrance of Mr. Carey on the duties of a Christian pastor, certain ministers of the denomination to which he belonged had mutually agreed, at the suggestion of the Rev. John Sutcliff, of Olney, to devote an hour, on the evening of the first Monday in every month, to social prayer, for the revival of religion and the success of the gospel. This proposal was adopted at a meeting held at Nottingham in June, 1784, and it was so congenial with the feelings of Mr. Carey, that, not content with holding a meeting at the stated period, he established, among his own friends at Leicester, an additional service of the same character, which, for the convenience of some of their number who resided in the country, was held on the market-day. To the great subject of missions, indeed, his mind was drawn with increasing earnestness from day to day, and he conversed on this interesting theme with his brethren in the ministry, till they became imbued with similar views. On a visit to Birmingham, he introduced his favorite topic in the company of one of the friends of the late excellent Samuel Pearce, who urged him to prepare his thoughts for publication, accompanying the request with an offer of ten pounds (about fifty dollars) toward the expense. On his return home, Mr. Carey met at Northampton his friends Fuller, Sutcliff, and Ryland, to whom he communicated what had passed. He importuned one of them to undertake the publication in his stead; but, as they severally declined the task, he fulfilled it himself soon after, by sending his "Inquiry" to the press. In April, 1791, sermons bearing on the same subject were delivered by Messrs. Fuller and Sutcliff, at a public meeting held at Clipston. Carey himself was chosen to preach the following year at Nottingham, where he poured forth all the energy of his soul in a discourse from Isaiah liv. 2, from which he enforced on his brethren the duty, first, to *expect* great things; and, secondly, to *attempt* great things. The effect was decisive: after the public service had ended, the ministers and a few other friends met, and resolved that a society should be formed at their next meeting, for propagating the gospel among the heathen. "Accordingly," says Dr. Ryland, "on October 2, 1792, I witnessed, in a little back parlor at Kettering, the formation of a small society, which began with a sub-

scription of £13, 2s., 6d. (about \$65), and of which this William Carey was the founder."

When this infant society resolved to venture on the bold step of sending forth one or two individuals into the heathen world, it was quite natural that they should think of Mr. Carey in the first instance. The obstacles in the way of such an enterprise were then far greater than now. The individuals thus associated had but little influence beyond the small provincial circle in which they moved. Not one among them was at all acquainted with the details of business necessarily involved in such an undertaking; and the great disinclination of Mrs. Carey to leave her native land, formed, in his case, a great and peculiar difficulty. But he consulted not with flesh and blood. "Brethren," said he, when, at the close of a day spent in fasting and prayer, the decisive question was proposed, if he were willing to go forth on this untried and hazardous service: "Brethren, if you send me among cannibals, I will go!" Thus, in the spirit of simple faith in the Redeemer, he commenced that sublime and benevolent career, in which for forty years he was enabled to persevere, so much to the benefit of his fellow-men, and to the glory of God his Savior.

While the conductors of the new society were yet undecided as to the sphere to be selected for their operations, they heard of a Mr. Thomas, who had spent some years in Bengal, and who was endeavoring to raise a fund in London for a mission to that part of the British colonial empire. This determined their course. Mr. Thomas was chosen as the colleague of Mr. Carey; they were solemnly designated to the missionary enterprise at Leicester, on the 20th of May, 1793; and on the 13th of June following, the two missionaries embarked on board a Danish Indianman, accompanied by Mr. Carey's whole family, his wife having given her consent, if accompanied by her sister, and the latter also being willing to join the party.

On their arrival at Calcutta, in November, 1793, two events occurred, both highly discouraging. They discovered that a native, in whom they expected to meet with a convert to Christianity, had relapsed into idolatry; and a small investment which they had taken with them as a means of their support and establishment was sunk, with the boat which contained it, in the Hooghly. Mr. Carey was thus left, with his wife and children, in a foreign land, far distant from his native country, among people of a strange speech, and suddenly deprived of nearly all means of subsistence. But, even in this extremity, his faith in God did not fail. He proposed to avail himself of his skill in the cultivation of land, for the support of his family; and quitting Calcutta, with his family, in an open boat, on the 6th of February, 1794, he went forth, like Abraham of old, not knowing whither he went. After proceeding on the river a distance of about forty miles, they reached at nightfall Deharta, the residence of the late Charles Short, Esq. By this gentleman, though an entire stranger, and by no means disposed to favor Mr. Carey's religious views, the whole party were received and entertained for several months with the kindest hospitality; and

with him, the sister of Mrs. Carey was not long afterward united in marriage.

In the year 1799, four additional missionaries were sent out to join him: two of whom died soon after their arrival; of the others, Mr. (now Dr.) Marshman, had been previously engaged in the instruction of youth; and Mr. Ward was a printer, whose aid, it was anticipated, would soon be required in providing the natives with a translation of the Scriptures into their own language, on which Mr. Carey had been diligently employed. But here, again, Providence appeared to thwart their intended operations. The authorities at Calcutta refused permission to the younger missionaries to proceed up the country and join Mr. Carey at Mudnabatty. Hence he was compelled, at a considerable pecuniary sacrifice, to relinquish the appointment he held there, and remove to the neighborhood of Calcutta. This led to their residence in the small Danish settlement of Serampore, a place which has since derived its chief importance from its being the seat of this mission. This removal, however undesirable at the time, was evidently conducive to the establishment and future prosperity of their undertaking. Their object was recognised and approved by the Danish governor, Colonel Bie; adequate protection was afforded them; the town and surrounding country were more populous than Mr. Carey's former station; and, above all, far greater facilities were enjoyed for printing the Sacred Scriptures in the native languages.

In 1801, Mr. Carey's success in the study of the vernacular languages of India, recommended him for an honorable and lucrative appointment under government. To provide the means of instructing the junior servants of the company in the respective languages, the Marquis Wellesley, then governor-general, founded a college in Fort William, and the professorship of Bengalee was offered to Mr. Carey. So diffident was he of his qualifications, that it required the persuasions of the provost and vice-provost, seconded by the opinion of his missionary brethren, to overcome his reluctance; and when he accepted the appointment, he begged to be styled "teacher," rather than to be notified under the more dignified appellation of "professor." His scruples, however, were overruled; the Sungskrit and Mahratta chairs were subsequently united with the Bengalee, and for more than thirty years afterward, even till the dissolution of the college, this eminent orientalist continued ably and successfully to discharge the duties of that arduous and responsible station.

In 1805, Mr. Carey published his grammar of the Mahratta language, and in the same year opened a mission chapel in the Lal Bazar in Calcutta; but a few months afterward, while Sir George Barlow held provisionally charge of the government of India, the Vellore mutiny broke out, supposed to have been occasioned by the apprehensions of the native troops lest the company should determine to pursue a system of *forcible proselytism*. However absurd it may now appear, to assign such a cause for these formidable disturbances, which were afterward proved to have arisen from the rash enforcement of certain points of military costume, the Bengal government

were induced to issue orders, for a time, to suspend all missionary exertions; and it is probable these orders would have been rigidly enforced, and with more difficulty revoked, but for the personal respect which Mr. Carey had acquired by four years of official conduct in the college.

About this period, Mr. Carey received from one of the American universities a diploma, constituting him Doctor of Divinity; he was also elected a member of the Asiatic Society of Calcutta. That useful institution, the Agricultural and Horticultural Society of India, originated with him; and for several years after its formation, in 1820, he was connected with it as vice president.

From the year 1815, when the New Charter Act of 1813 came into operation, by which the exertions of the missionaries were legally sanctioned, to the period of his lamented decease, few incidents occurred in the life of Dr. Carey of a nature requiring notice in this brief memoir. In the distribution and arrangement of his time, he was very regular; and while his missionary engagements formed the great business of his life, his fondness for botany, and other branches of natural history, furnished him with agreeable and salutary recreation. Of those days of the week which he spent at Serampore, the earliest hours were devoted to his garden, which occupied six acres, and contained almost every specimen of the vegetable kingdom which could be raised in the climate, planted, for the most part, by his own hands. Three days in each week were occupied in Calcutta; in what manner, the following extract from a letter addressed to a friend, and given as an apology for not writing, will show:—

"I rose this morning at a quarter before six, read a chapter in the Hebrew Bible, and spent the time till seven in private addresses to God. I then attended family prayer with the servants, in Bengalee. While tea was getting ready, I read a little in Persian with a Moonshi, who was waiting when I left my bed-room; read also, before breakfast, a portion of the Scripture in Hindostanee. The moment breakfast was over, sat down to the translation of the Ramayuna from Sungskrit, with a pundit, who was also waiting, and continued this translation till ten o'clock, at which hour I went to college, and attended the duties there till between one and two o'clock. When I returned home, I examined a proof-sheet of the Bengalee translation of Jeremiah, which took till dinner-time. After dinner, translated, with the assistance of the chief pundit of the college,* the greater part of the eighth chapter of Matthew into Sungskrit. This employed me till six o'clock. After six, sat down with a Telinga pundit (who is translating from the Sungskrit into the language of his country) to learn that language. At seven I began to collect a few previous thoughts into the form of a sermon, and preached in English at half past seven. About forty persons present, and among them one of the pious judges of the Sudder Dewany Adawlut. After sermon, I got a subscription from him of five hundred rupees, toward erecting our new place of worship:

* The native whose portrait appears in company with Dr. Carey's in our engraving. It is said to be an excellent likeness

he is an exceedingly friendly man. Preaching was over, and the congregation gone by nine o'clock. I then sat down and translated the eleventh chapter of Ezekiel into Bengalee, and this lasted till near eleven; and now I sit down to write to you. After this, I conclude the evening by reading a chapter in the Greek Testament, commending myself to God. I have never more time in the day than this, though the exercises vary."

By steady perseverance in a course of exertion like this, Dr. Carey was enabled to accomplish a vast amount of philological labor, all more or less subservient to the great design of transferring the inspired oracles into as many of the oriental tongues as possible. His Mahratta grammar, already mentioned, was followed by a Sungskrit grammar, extending to more than a thousand quarto pages, in 1806; a Mahratta dictionary, 8vo, in 1810; a Punjabee grammar, 8vo, in 1812; a Telinga grammar, 8vo, in 1814; besides the Ramayuna, in the original text, carefully collated with the most authentic manuscripts, in three volumes, quarto, which appeared between the years 1806 and 1810.

His philological works of a later date are, a Bengalee dictionary, in three volumes, 4to, 1818, of which a second edition was published in 1825, and another in 8vo, in 1827-1830; a Bhotanta dictionary, 4to, 1826; also a grammar of the same language, edited by him and Dr. Marshman. A dictionary of the Sungskrit, nearly ready for press, was consumed in a fire which destroyed the Serampore printing-office in 1812. It is not known that this work was ever resumed; nor did the doctor complete a more extensive undertaking than all, which he had not only projected, but for which he had collected materials: this was "*A Universal Dictionary of the Oriental Languages derived from the Sungskrit*," on the plan of Johnson's lexicon, with the synonyms in the different affiliated tongues, with the Hebrew and Greek terms of a correspondent meaning.

Great as were these achievements in the field of oriental literature, they were entirely subordinate to, and surpassed by, the exertions of Dr. Carey in the province of biblical translation. The versions of the sacred Scriptures, in the preparation of which he took an active and laborious part, include the Sungskrit, Hindee, Brijbhassa, Mahratta, Bengalee, Ooriya, Telinga, Kurnata, Maldivian, Gujaratee, Buloshee, Pushtoo, Punjabee, or Shikh, Kashmeer, Assam, Burman, Pali, or Magudha, Tamul, Cingalese, Armenian, Malay, Hindosthanee, and Persian. In six of these tongues, the whole Scriptures of the Old and New Testaments have been printed and circulated; the New Testament has appeared in twenty-three languages; besides various dialects, in which smaller portions of the sacred text have been printed. The whole number is stated at *forty*; and if to these be added the Chinese Bible, translated by Dr. Marshman, we are probably below the truth when we state that the Serampore press was honored to be the instrument, in about thirty years, of rendering the word of God accessible to three hundred millions of human beings, or about one third the population of the world.

For many years the health of Dr. Carey, notwithstanding occasional attacks of fever, was far more vigorous than usual among European residents in India. His habits of early rising, exercise in the open air, and great simplicity in diet, with a flow of natural spirits which gained for him the appellation of "the cheerful old man," doubtless contributed to this, and were the subordinate causes of lengthening a life so valuable to the church and to the world. At length his strength began to decline under the weight of years, and incessant application to his public ministerial duties, till in September, 1833, a stroke of apoplexy prostrated his remaining energies, and led his friends to anticipate his speedy removal. Through the hot season, he was confined to his bed in a state of great helplessness, scarcely able to speak or to receive nourishment, till at length, on Monday, June 9, 1834, at five in the morning, he yielded up his spirit into the hands of his Redeemer, having nearly completed his seventy-third year. His remains were committed to the grave early in the following morning, and suitable instructions were drawn from the solemn event in a discourse by Mr. Robinson, at the Lal Bazar chapel in Calcutta, on the next Lord's day; and by Mr. Mack, at Union chapel, on June 29th, to a crowded audience.

Dr. Carey was thrice married; a widow and three sons survive him: William, occupying the missionary station at Cutwa; Jabez, who has been employed under the auspices of the Indian government, in establishing schools in the distant province of Ajimere; and Jonathan, an attorney of the supreme court in Calcutta. He was interred, by his own express desire, by the side of his second wife; and with that deep humility which so eminently adorned his whole life, he gave particular directions that the following inscription, "and nothing more," should be placed on his tombstone:—

"William Carey, born August 17th, 1761 died—

"A wretched, poor, and helpless worm,
On thy kind arms I fall."

Although, probably, this article has already extended beyond its proper limits, we can not persuade ourselves to close it, without an attempt to recall, and fix on the attention of the reader, some of the principal features by which the character of this great and good man was distinguished.

1. His entrance on the missionary field was eminently an act of *self-denying consecration* to the service of God, in that previously almost untried department of evangelical labor. His own words, as they appear in the "Inquiry," published nearly fifty years ago, embody the convictions on which he acted, and deserve the most attentive consideration of all who sustain, or anticipate, the office of the gospel ministry:—

"A Christian minister is a person who, in a peculiar sense, is *not his own*; he is the *servant* of God, and therefore ought to be wholly devoted to him. By entering on that sacred office, he solemnly undertakes to be always engaged, as much as possible, in the Lord's work, and not to choose his own pleasure, or employment, or pursue the ministry as a some-



Sketch of the House in which Dr. Carey was born.*

ning that is to subserve his own ends, or interests, or as a kind of by-work. He engages to go where God pleases, and to do, or endure, what he sees fit to command, or call him to, in the exercise of his function. He virtually bids farewell to friends, pleasures, and comforts, and stands in readiness to endure the greatest sufferings in the work of his Lord and master. It is inconsistent for ministers to please themselves with thoughts of a numerous auditory, cordial friends, a civilized country, legal protection, affluence, splendor, or even a competency. The slights and hatred of men, and even pretended friends, gloomy prisons, and tortures, the society of barbarians of uncouth speech, miserable accommodations in wretched wildernesses, hunger and thirst, nakedness, weariness and painfulness, hard work, and but little worldly encouragement, should rather be the objects of their expectation. Thus the apostles acted in the primitive times, and endured hardness as good soldiers of Jesus Christ: and though we, living in a civilized country, where Christianity is protected by law, are not called to suffer these things while we continue here, yet I question whether all are justified in staying here, while so many are perishing without means of grace in other lands. Sure I am that it is entirely contrary to the spirit of the gospel, for its ministers to enter upon it from interested motives, or with great worldly expectations. On the contrary, the commission is a sufficient call

* We have great pleasure in presenting our readers with an engraving of the modest building in which his parents resided, and where this great and good man was born. It stands (or stood, for we are not certain whether it is still in existence) on the roadside, in the village of Paulerspury, between Stony Stratford and Towcester, Northamptonshire, three miles distant from the latter place.

to them to venture all, and, like the primitive Christians, go everywhere preaching the gospel."

2. Of Dr. Carey it might peculiarly be said, that *he walked by faith*. No sooner had the word of God become the means of renovating his heart, than he began to employ it as the rule and directory of his life, with an energetic simplicity of purpose seldom equalled, perhaps never surpassed. What he received as true, became at once an element of action, and the parent of cheerful, undoubting expectation and hope. Carey once remarked, "If it be the duty of all men, where the gospel comes, to believe unto salvation, then it is the duty of those who are intrusted with the gospel to endeavor to make it known among all nations for the obedience of faith." When he had entered on the field, and felt the actual pressure of discouragements on every side, his faith remained unshaken. "When I left England," he writes, a few months after landing in Bengal, "my hope of the conversion of the heathen was very strong; but among so many obstacles it would utterly die away, unless upheld by God; having nothing to cherish it, but many things to obstruct it for now a year and nineteen days, which is the space since I left my dear charge at Leicester. Since that time, I have had hurrying up and down in a five months' imprisonment with worldly men on board the ship; five months spent in learning the language, my Moonshi not understanding English sufficiently to interpret my preaching; my colleague separated from me; long delays respecting my expected settlement; few opportunities for social worship; no woods to retire to, like Brainerd, for fear of tigers—not fewer than twenty men in the department of Dayhatta, where I

am, having been carried away by them from the salt works this season ; no earthly thing to depend on. Well, I have God, and his word is sure ; and though the superstitions of the heathen were a million times more deeply rooted, and the examples of Europeans a million times worse than they are—if I were deserted by all, and persecuted by all—yet my hope, fixed on that sure word, will rise superior to all obstructions, and triumph over all trials : God's cause will triumph, and I shall come out of all trials as gold purified in the fire."

3. Some reference has already been made to the *humility* by which Dr. Carey was distinguished, and which, throughout life, afforded the clearest evidence that he had learned of Him who was meek and lowly in heart. So far from assuming any credit for his varied and abundant labors, he was uneasy at hearing them adverted to. "There is nothing remarkable," said he, on one occasion, "in what I have done. Suppose that the western world had been covered with idols : if any man had sat down in the centre of Europe, he might have done the same thing. It has only required patient perseverance." Almost incredible as it may appear, a passage occurs in one of his letters to a confidential friend, in which he complains of *indolence* as his easily besetting sin !

4. The enlightened *humanity* of this excellent man led him to exert himself on all practicable occasions to alleviate the sufferings ever attendant on a state of heathenism. He took an active share in the measures which resulted in the prevention of infanticide, in the prohibition of the voluntary murders formerly perpetrated at Saugur island, at the mouth of the Hooghley ; as well as in that glorious triumph of Christian humanity, the extinction of the infamous rite of Suttee, which annually consigned such numbers of hapless widows to the funeral-pile. It would probably be difficult to name any project for advancing the welfare of India, with regard to the temporal interests of her teeming population, as well as to their relation to another state, in which Dr. Carey was not interested, either as the author, or as active in its advocacy and support.

5. As the principles by which Dr. Carey was actuated effectually raised him above the love of worldly distinction, and diffused an air of singular plainness and moderation over all the habits of his life, so was he honored to set before the whole Christian world a memorable example of *disinterestedness* and *generosity*. Soon after the commencement of the mission, when placed by Providence where he had a prospect of being able to maintain his family by his personal exertions, he wrote to his friends at home, begging that the trifling sum hitherto assigned for his support might be employed in some other direction ; and when, in following years, his talents had procured him honor and emolument from the college of Fort William, the whole surplus of his income, after defraying the very moderate expenses of his own establishment, was devoted, sacredly, but without ostentation, to the great and holy cause in which he was engaged.

Thus, throughout life, did this venerable Christian approve himself : a servant of God ; than whom,

probably, few in modern days have more fully exemplified the apostolic description, "None of us liveth to himself, and no man dieth to himself : for whether we live, we live unto the Lord ; and whether we die, we die unto the Lord : whether we live, therefore, or die, we are the Lord's."

ACCURACY OF THE BIBLE.

AN astonishing feature of the word of God is, that, notwithstanding the time at which its compositions were written, and the multitude of the topics to which it alludes, there is not one physical error, nor one assertion or allusion disproved by the progress of modern science. None of those mistakes which the science of each succeeding age discovers in the books of the preceding ; above all, none of those absurdities which modern astronomy indicates in such great numbers in the writings of the ancients—in their sacred codes, in their philosophers, and even in the finest pages of the fathers of the church—not one of these errors is to be found in any of our sacred books. Nothing there will ever contradict that which, after so many ages, the investigations of the learned world have been able to reveal to us on the state of our globe, or on that of the heavens. Peruse with care our Scriptures from one end to the other, to find such spots. And while you apply yourselves to this examination, remember that it is a book which speaks of everything, which describes nature, which recounts the creation of the heavens, of the light, of the water, of the mountains, of the animals, and of the plants. It is a book which teaches us the first revolutions of the world, and which also foretells its last : it recounts them in the circumstantial language of history ; it extols them in the sublimest strains of poetry, and it chants them in the charms of glowing song. It is a book which is full of oriental rapture, elevation, variety, and boldness. It is a book which speaks of the heavenly and invisible world, while it also speaks of the earth and things visible. It is a book which nearly fifty writers, of every degree of cultivation, of every state, of every condition, and living through the course of fifteen hundred years, have concurred to make. It is a book which was written in the centre of Asia, in the sands of Arabia, and in the deserts of Judah ; in the courts of the temple of the Jews, in the music-schools of the prophets of Bethel and of Jericho, in the sumptuous palaces of Babylon, and on the idolatrous banks of Chebar ; and, finally, in the centre of the western civilization, in the midst of the Jews and of their ignorance, in the midst of polytheism and its idols, as also in the bosom of pantheism and of its sad philosophy. It is a book whose first writer preceded, by more than nine hundred years, the most ancient philosophers of Greece and Asia—the Thalesæa, and the Pythagoruses, the Zalucuses, the Xenophons, and the Confuciuses. Well, search among its 50 authors, its 66 books, its 1189 chapters, and its 31,173 verses—search for only one of those thousand errors which the ancients and the moderns commit when they speak of the heavens or of the earth—of their revolutions or of their elements—but you will find none.



Queenstown.—From a drawing by Mrs. Simcoe, taken during the Revolutionary War.

THE NIAGARA DISTRICT, WESTERN CANADA.

QUEENSTOWN is situated on the Niagara river, or more properly strait, about seven miles above the falls, and six from the shores of Lake Ontario. There is a good and pleasant road parallel to the river from Fort Erie on the lake of the same name, through Queenstown, to Newark on Lake Ontario. The length of the Niagara strait is thirty-five miles : by this outlet the waters of Lake Erie flow into Ontario, passing in their course over the tremendous cataract. A succession of severe actions between the Americans and the British took place in 1812, 1813, and 1814, on the banks of the Niagara ; and one of the most desperate occurred within two miles of the falls. The circumstances attending this contest were peculiarly calculated to show the hateful effects of war, as they aroused all those bad passions which seem tenfold more bitter in a border-warfare, when the ties of neighborhood and kindred are disregarded, and their obligations violated. The militia on both sides being called out, neighbors were fighting against each other—a husband against the father of his wife, and against her brothers. Every town on the frontier was destroyed, either by one or other of the belligerent parties. In October, 1812, the American and British forces encountered each other at Queenstown, which was the scene of a sanguinary contest. The spot where the English general, Sir Isaac Brock, fell on this occasion is marked by a monument erected to his memory. It is one hundred and twenty-six feet high, and stands two hundred and seventy feet above the level of the Niagara stream, which runs just below it, so that it commands a noble view, thus described by Miss Mar-

taineau, in her "Retrospect of Western Travel :"—"To the left a prodigious sweep of forest terminates in blue Canadian hills. On the right is the American shore. There stands the village of Lewiston (opposite Queenstown), with its winding descent to the ferry. At our feet lay Queenstown, its sordidness being lost in distance, and its long street presenting the appearance of an English village. The green river rushes between its lofty wooded banks, which suddenly widen at Queenstown, causing the waters to spread and relax their speed, while making their way with three or four bends to the lake. We saw the white church of Niagara, rising above the woods some miles off ; and beyond, the vast lake, its waters gray on the horizon. There was life in this magnificent scene. The ferry-boat was buffeted by the waves ; groups were in waiting on either side the ferry ; and teams were in the fields."

About half-way between the falls and Queenstown there is a remarkable whirlpool, of which little notice is taken in the note-books of travellers, whose attention is too much occupied by the grandeur of the falls. The whirlpool is most probably caused by extensive cavernous hollows in the rocky bed of the river in which the waters are partially engulfed. Millions of tons of water are precipitated over the falls every hour, and yet here the Niagara is pent up within a narrow channel not exceeding one hundred yards in width. A recent tourist says, that "so completely is the current carried round in the circular whirlings that water assumes in any vortex having a large outlet at its base, that trees, beams, and branches of wood, are carried round and round for hours in succession in its centre, sometimes descending out of sight, and reappearing again near the same place broken into fragments. It is compared by those who have seen

both to the celebrated maelstrom of Norway, although on a smaller scale." In Cotton's "Tour of the Lakes" there is a harrowing account of a boat having by accident come within range of the whirlpool, and an unfortunate person being hurried round the vortex many times before the final catastrophe, while his friends on shore could render him no assistance. The strait is so narrow at this point, that a stone has been thrown across from the American to the Canadian side, and a suspension bridge has been projected as a means of communication between them. The rocky cliff on either side is about two hundred and fifty feet high, and the width less than that over which the bridges at Menai and Clifton are suspended. As it would overhang the whirlpool, it is thought that the cost would be reimbursed by the payments of persons visiting the spot. There is a railway from Lewiston to Buffalo.

Immediately after passing the elevated plateau of Queenstown heights, the land shelves abruptly toward the shores of Lake Ontario, distant five or six miles, in a manner which at once arrests the attention of the geologist. The table-land, three hundred feet high, is broken by a precipice parallel to the lake. There is little doubt that this was once the boundary of its southern shore. Colonel Whittlesey, a scientific geologist and surveyor, who was officially appointed to examine this region, gives the following grounds for this supposition, which also account for the existence of the falls. The table-land, it is to be observed, on both sides of the Niagara strait, namely, at Queenstown and Lewiston, is level with Lake Erie. The line where it is abruptly broken is traceable for more than a hundred miles parallel with Lake Ontario, east of the Niagara, and Colonel Whittlesey thinks still farther, to the head of the St. Lawrence at the Thousand Isles, or even to the heights of Abraham at Quebec, and the falls of Montmorency. "At this latter spot, and so on up the Thousand Isles above, some mighty rupture of the rocky beds beneath seems to have occurred by some convulsion of nature, and thus furnished a passage or drain for the upper lakes into the Atlantic. The time when this convulsion occurred must have been simultaneous with the production of the falls of Niagara, which until then were a part of the shores of the two lakes, which here silently commingled their waters, until the sudden rupture and draining below threw the momentum of the mighty flood from the *now* table-land, and *then* lake-bed, at Queenstown, down the high precipice or naked shore, and thus excavated for itself the deep channel of Niagara river from this point to the diminished basin of Ontario. From Queenstown, the falls, in course of time, by gradually, as they now hourly do, breaking off the shelving calcareous rock, worked their way naturally up to their present position, seven miles above, and will ultimately penetrate into Lake Erie; when another draining will take place, of Erie, Huron, and Michigan, both which latter are also doubtless diminished basins, up to the Saut Ste. Marie, or Low falls, which divides these lower lakes from the great inland sea of Lake Superior. When that event

occurs, another Niagara will in the same way be formed at this passage into Lake Superior. And so the mighty work will proceed, until our lakes, which none of them have great rivers of their own to supply the present constant draining of the St. Lawrence, and by evaporation, will shrink to minor pools, leaving, ultimately, their rich beds bare, to become the seats of civilization and of a vast population." Such are the speculations which a view of the neighborhood of Queenstown suggests to the geologist and philosopher.

At the embouchure of the Niagara into Lake Ontario its breadth is about a quarter of a mile. The entrance is defended by two forts, one on the Canadian and the other on the American side. Mrs. Jameson, when in Canada, gave a very charming picture of the beauties of Ontario: "This beautiful Lake Ontario!" she exclaims—"my lake—for I begin to be in love with it, and look on it as mine! It changed its hues every moment, the shades of purple and green fleeting over it, now dark, now lustrous, now pale—like a dolphin dying; or, to use a more exact, though less poetical comparison, dappled, and varying like the back of a mackerel, with every now and then a streak of silver light dividing the shades of green: magnificent, tumultuous clouds came rolling round the horizon; and the little graceful schooners, falling into every beautiful attitude, and catching every variety of light and shade, came courtesying into the bay: and flights of wild geese and great black loons were skimming, diving, sporting over the bosom of the lake: and beautiful little unknown birds, in gorgeous plumage of crimson and black, were fluttering about the garden; all life and light and beauty were abroad in the resurrection of Nature!" This was written when the long Canadian winter was just over.

SUPERSTITIONS OF THE IRISH PEASANTRY RESPECTING FAIRIES AND SUPERNATURAL AGENCY.

"Such airy beings awe th' untutored swain,
Nor thou, though learned, his homelier thoughts neglect."
COLLINS.

In common with other countries, particularly the Highlands of Scotland, a traditional belief exists among the Irish peasantry in those romantic little sprites denominated fairies; and it is wonderful, considering their being creatures of imagination, that the superstitions respecting them should have remained so much confined, and so very similar. Whether the fairy mythology of Ireland has been derived from the East, and transmitted thence through the medium of Spain, or has, as some believe, a northern origin, it is of little import to inquire, particularly as nothing more than conjecture can now be advanced on the subject. It is, however, evident, that the present fairies of Ireland, if not Gothic creations, were at least modelled in the same school and age with the elves of northern Europe.

There is an odd mixture of the ridiculous and the

sublime in the prevalent notions respecting such beings. The feelings and passions of mortality, and immaterial bodies, being superstitiously ascribed to them, fairies are supposed to possess both the power and the inclination to revenge an affront. The motive of fear, which induces some savage nations to worship the Devil, prompts the vulgar in Ireland to term fairies "good people," and in Scotland "guid folk;" nor is it uncommon to see a rustic, before drinking, spill a small part of his draught upon the ground, as a complimentary libation to the fairies. Such as use the word *fairy*, are often corrected in a whisper, which caution arises from conceiving that these beings are invisibly present, and the appellation is considered offensive, as denoting an insignificant object. Thus, hoping to deceive by flattery, the maxim most attended to in the intercourse with these "little great ones," is that "civility begets civility." The same system of fear and flattery seems to have existed among the Irish, even toward animals, in the time of Elizabeth; for Camden tells us, "They take unto them wolves, to be their *godsibs* (gossips), whom they term *Chari Christ*, praying for them, and wishing them well, and so they are not afraid to be hurt by them."

The circular intrenchments and barrows, known by the name of Danish forts, in Ireland, are pointed out as the abode of fairy communities, and to disturb their habitation, in other words, to dig, or plough up, a *rath*, or fort, whose construction the superstitious natives ascribe to the labor and ingenuity of the "good people," is considered as unlucky, and entailing some severe disaster on the violator and his kindred. An industrious peasant, who purchased a farm in the neighborhood of Mallow from a near relative of his commenced his improvements by building upon it a good stone house, together with a lime-kiln. Soon after, he waited on the proprietor to state "the trouble he was come to by reason of the old fort, the fairies not approving of his having placed the lime-kiln so near their dwelling;—he had lost his sow with nine *bonniveens* (sucking-pigs), his horse fell into a quarry and was killed, and three of his sheep died, 'all through the means of the fairies.'" Though the lime-kiln had cost him five guineas, he declared he would never burn another stone in it, but take it down, without delay, and build one away from the fort, saying, he was wrong in putting that kiln in the way of the "good people," who were thus obliged to go out of their usual track. The back door of his house unfortunately also faced the same fort, but this offence was obviated by almost closing it up, leaving only a small hole at the top, to allow the good people free passage, should they require it. In these *raths*, fairies are represented as holding their festive meetings, and entering into all the fantastic and wanton mirth that music and glittering banquets are capable of inspiring. A fairy chieftain, of much local celebrity, named Knop, is supposed to hold his court in a *rath*, on the road-side between Cork and Youghall, where often travellers, unacquainted with the country, have been led astray by the appearance of lights, and by alluring sounds proceeding from within; but when

"The village cock gave note of day,
Up sprang in haste the airy throng;
The word went round, 'away! away!'
The night is short, the way is long!"—

and the delicious viands change into carrion. The crystal goblets become rugged pebbles, and the whole furniture of the feast undergoes a similar metamorphosis.

An eddy of dust, raised by the wind, is attributed to the fairies journeying from one of their haunts to another; on perceiving which, the peasant will obsequiously doff his hat, muttering, "God speed ye, God speed ye, gentlemen;" and returns it to his head, with the remark, "good manners are no burden," as an apology for the motive, which he is ashamed to acknowledge. Should he, however, instead of such friendly greeting, repeat any short prayer, or devoutly cross himself, using a religious response, the fairy journey is interrupted, and if any mortals are in the train, the charm by which they were detained is broken, and they are restored to human society. On these occasions, the production of a black-hafted knife is considered as extremely potent in dissolving the spell. This weapon is believed to be effective not only against fairy incantation, but also against any supernatural being; and accounts of many twilight rencontres between shadowy forms and mortals are related, to establish its power, gouts of blood or jelly being found in the morning on the spot where the vision had appeared.

The most romantic dellis are also pointed out as scenes of fairy resort, and distinguished by the term *gentle places*; beetling linen by the side of a rocky stream that murmurs through an unfrequented glen, is represented as a favorite or rather common female fairy occupation, where they chant wild and pathetic melodies, beating time with their beetles. The herbs and plants, with which such glens abound, are considered as under fairy influence, and are collected, with many ceremonies, for charms, by cunning old woman, termed *fairy doctors*, or sometimes, from their professed knowledge of surgery, *bone-setters*. A confidence in superstitious quackery exists so strongly among the lower orders in Ireland, that many instances are known where patients have been carried a distance of several miles to a *bone-setter*, to whom a fee was given; when they might have received, without removal, and free of expense, every attendance from the most skillful surgeons. "I would not, if all the doctors in Ireland told me so, treat the poor sufferer thus," is the prefatory sentence used by these "wise women." "What do doctors know about sick people?—but take the herbs which I shall give you, bury them at sunset in the northeast corner of the fort-field, and when you return, tie a thread three times round the left-hand upper post of the sick person's bed, and let it remain there for nine nights," &c.

Fairies are represented as exceedingly diminutive in their stature, having an arch and malicious expression of countenance, and generally habited in green, with large scarlet caps; hence the beautiful plant, *digitalis purpurea*, is named "fairy-cap" by the vulgar, from the supposed resemblance of its bells

to this part of fairy dress. To the same plant, many rustic superstitions are attached, particularly its salutation of supernatural beings, by bending its long stalks in token of recognition.

Old and solitary thorns, in common with the digitalis, are regarded with reverence by the peasantry, and considered as sacred to the revels of these eccentric little sprites, whose vengeance follows their removal. Any antique implement casually discovered by the laborer is referred to the fairies, and supposed to have been dropped or forgotten by them; small and oddly-shaped tobacco-pipes, frequently turned up by the spade or the plough, the finder instantly destroys, to avert the evil agency of their former spiritual owners. Among those remains may be noticed the flint arrow-heads, said to be sportively shot at cattle by the fairies; and in compliance with the popular superstition termed, even by antiquarians, "elf arrows."

The fairies are believed to visit the farm houses in their district on particular nights, and the embers are collected, the hearth swept, and a vessel of water placed for their use before the family retire to rest. But these dubious divinities seem to preside more especially over cattle, corn, fruits, and agricultural objects. Milking the cows, upsetting the dairy pans, and disarranging whatever may have been carefully placed in order, are among their mischievous proceedings. CLURICAUNE, or LEPREHAUNE, is the name given to the Irish PUCK. The character of this goblin is a compound of that of the Scotch BROWNIE and the English ROBIN GOODFELLOW. He is depicted (for engraved portraits of the Irish Leprehaune are in existence, as a small and withered old man, completely equipped in the costume of a cobbler, and employed in repairing a shoe. A paragraph recently appeared in a Kilkenny paper stating that a laborer, returning home in the dusk of the evening, discovered a Leprehaune at work, from whom he bore away the shoe which he was mending; as a proof of the veracity of his story, it was further stated, that the shoe lay for the inspection of the curious at the newspaper office. The most prominent feature in the vulgar creed respecting the Leprehaune is, his being the possessor of a purse, supposed to be, like that of Fortunatus, inexhaustible; and many persons, who have surprised one of these fairies occupied in shoe-making, have endeavored to compel him to deliver it; this he has ingeniously avoided, averting the eye of his antagonist by some stratagem, when he disappears, which it seems he has not the power of doing as long as any person's gaze is fixed upon him.

When a child appears delicate, or a young woman consumptive, the conclusion is, that they are carried off to be made a playmate or nurse to the young fairies, and that a substitute, resembling the person taken away, is deposited in their place, which gradually declines, and ultimately dies. The inhuman means used by ignorant parents to discover if an unhealthy child be their offspring or a changeling (the name given to the illusory image), is, placing the child, undressed, on the road-side, where it is suffered to lie a considerable time exposed to cold.

After such ceremony, they conclude a natural disorder has caused the symptoms of decay; and the child is then treated with more tenderness, from an idea, that had it been possessed by a fairy, that spirit would not have brooked such indignity, but made its escape. Paralytic affections are attributed to the same agency, whence the term "fairy-struck;" and the same cruel treatment is observed toward aged persons thus afflicted.

A curious spirit, and one I believe peculiar to Ireland, is the BANSHEE, or WHITE FAIRY, sometimes called SHE FROGH, or the House Fairy. The derivation of both these names appears to me obvious, from the credulous personification, that of a small and shrivelled old woman with long white hair, supposed to be peculiarly attached to ancient houses or families, and to announce the approaching dissolution of any of the members by mournful lamentations. This fairy attendant is considered as highly honorable; and in part of an elegy on one of the knights of Kerry, still extant, the family Banshee is introduced as deploring, with wailing accents, the knight's impending fate. Every trader at Dingle who hears the strain becomes alarmed lest it should forebode his own death; but the bard assures them, with an air of humorous sarcasm, they have no cause for uneasiness, such warning being given only to those of illustrious descent.

Another species of Irish fairy is the PHOOKA, the descriptions given of which are so visionary and undefined, it is impossible to reduce them to detail. The name of many lonely rocks and glens in Ireland declares them sacred to this spirit. In the county Cork there are two castles called Carrig Phooka, or the Phooka's Rock, one near Doneraile, the other not far from Macroom; and in the county Wicklow, the celebrated waterfall of Poula Phooka, or the Phooka's Cavern, is well known.

Notwithstanding the universal belief in fairy influence, the credence given to witchcraft among the vulgar Irish is by no means proportionate. Some few instances are historically preserved; but, considering the extent and reputation which witchcraft obtained during the reigns of Elizabeth and James the First, in England, these may be viewed as imported rather than primitive superstitions. The admirable account of Moll White, given in the *Spectator*, presents a collection of the popular notions respecting the sorcery of old women; and those who are inclined to investigate the subject further, may find some hundred volumes written upon it.

The most remarkable Irish witch on record, is Dame Alice Ketyll. Among the charges made against her, when examined in 1325, was the sacrificing nine red cocks to her familiar spirit or imp, named Robyn Artysson, "at a stone bridge in a certain fourcrosse high-way." "Item, that she swept the streets of Kilkenny with besomes between Complin and Courefew, and in sweeping the filth towards the house of William Utlaw her sonne, by way of conjuring, uttered these words:

"Unto the house of William, my sonnt,
Hie all the wealth of Kilkenny townt."

And, among "the goods and implements of the

said Alice, there was a certain holy wafer cake found having the name of the divell imprinted upon it; there was found also a boxe, and within it an ointment, wherewith she used to besmear or grease a certain piece of wood called coultrée, which, being thus anointed, the said Alice, with her complices, should ride and gallop upon the said coultrée whithersoever they would, all the world over, through thick and thin, without either hurt or hindrance." These things, we are told, were notorious, and dame Ketyll, to avoid punishment, escaped to England; but one of her accomplices, Pernill or Parnell, was burnt at Kilkenny, who avouched that Alice's son William "deserved death as well as herself, affirming that he, for a year and a day, wore the divell's girdle upon his bare bodie." Kilkenny seems to have been peculiarly fatal to witches. In October, 1578, Cox relates that Sir William Drury, the Lord Deputy caused thirty-six criminals to be executed there, "one of which was a blackamoor, and two others were witches, and were condemned by the law of nature, for there was no positive law against witchcraft in those days."

Some more recent account of witches is traditionally preserved in Ireland, particularly of Nanny Steer, whose malign glance produced madness, and the malady of many a wretched lunatic, who wandered about the country, was attributed to her baneful influence.

In the Queen's county, a young man, named Rutledge, on the day of his marriage, is said to have become a victim to one of these dreadful looks, from his having neglected to invite Nanny Steer to the wedding—who appeared an unbidden guest, and casting an evil eye on the bridegroom, he immediately became a maniac.

"In no case," says Camden, speaking of Irish superstitions, "must you praise a horse or any other beast, until you say, 'God save him,' or unless you spit upon him. If any harm befall the horse within three dayes after, they seeke him that praised him, that he may mumble the Lord's prayer in his right ear. They think that there bee some that bewitch their horses with looking upon them, and then they use the help of some old haggas, who, saying a few prayers with a loud voice, make them well again." This belief in the fatal effects of an evil eye is as prevalent at the present day as when Camden wrote; and few, if any, of the lower orders, will speak to or of a child without spitting out, and excusing himself, should a superior be present, with—"It's for good luck sure."—"And God bless the boy, and make a fine man of him." So powerful is this superstition, that even people of education, and above the ordinary rank, are obliged, from policy, to accommodate themselves to it in their intercourse with the peasantry, as few things are considered more dangerous and unfriendly, or are longer remembered, than the omission of such ceremony.

Another vulgar superstition regarding witches is their power of assuming the shape of some insect or animal: the most favorite forms are those of a fly or a hare; under the latter disguise they are supposed to suck the teats of cows, and thus deprive them of their milk, or communicate an injurious effect to it.

Of the following story numberless variations are in circulation among the Irish peasantry. A herdsman having wounded a hare which he discovered sucking one of the cows under his care, tracked it to a solitary cabin, where he found an old woman smeared with blood and gasping for breath, extended almost lifeless on the floor, having, it is presumed, recovered her natural shape.

In churning, should not the milk readily become butter, the machinations of some witch are suspected. As a test, the iron coulter of the plough is heated in the fire, and the witch's name solemnly pronounced, with the following charm, on whom this spell is supposed to inflict the most excruciating tortures,—

"Come butter, come,
Come butter, come,
Peter stands at the gate
Waiting for a buttered cake,
Come butter, come."

And if the milk has lost its good qualities by means of incantations, it soon turns to excellent butter.

In the sixteenth century, the same opinion existed in Ireland, somewhat tinged with a relic of pagan or druidical rites, fire being considered, before the introduction of Christianity, the immediate representative of the Deity, and the first of May as peculiarly sacred to these rites, many relics of which may still be discovered.

"They take her for a wicked woman and a witch, whatever she be, that commeth to fetch fire from them on May-day, (neither will they give any fire then, but unto a sicke body, and that with a curse), for because they thinke the same woman will, the next summer, steale away all their butter. If they finde a hare among their heads of cattell on the said May-day, they kill her, for they suppose shee is some old urot, that would filch away their butter. They are of opinion that their butter, if it be stollen, will soone after bee restored againe, in case they take away some of the thatch that hangeth over the doore of the house, and cast it into the fire."

As in England, a worn horseshoe nailed on the threshold, or near the entrance of a house, is considered as a security again witchcraft; but this remedy is used only in the better description of cabins.

Second-sight, so common in the Highlands, I believe is unknown in the south of Ireland. Story relates a mysterious appearance of stars, accompanied by heavy groans, that preceded the landing of the rival monarchs William and James, seen by "one Mr. Hambleton, of Tollymoore, a justice of the peace in his county, and a sober, rational man," in company with others who were journeying towards Dundalk; adding, "They have a great many tales of this kind in Ireland, and the Inniskilling men tell you of several such things before their battles."

On the whole, from what may be collected, the present state of Irish superstition closely resembles that of England during the age of Elizabeth; a strong proof of the correct measurement of those who have stated a space of two centuries to exist between the relative degree of popular knowledge and civilization attained by the sister kingdom.



POOL OF SILOAM.

"By cool Siloam's shady rill,
How sweet the lily grows!
How sweet the breath beneath the hill
Of Sharon's dewy rose."

"Lo! such the child whose early feet
The paths of peace have trod;
Whose secret heart with influence sweet,
Is upward drawn to God."

THERE is a fountain and a pool of Siloam. They are on the east side of Mount Zion, at the foot of the hill, or rather under the hill, as the water gushes out from the rock some twenty feet below the surface of the earth. From this fountain the water flows under the ground for a considerable distance, when it enters the pool of Siloam. From the pool the waters flow gently down into the lower part of the Valley of Jehosaphat, which was anciently called "the King's Dale," where they water a few gardens of cucumbers, which are cultivated by the poor people who inhabit the village of Siloam, on the opposite side of the valley. The waters of Siloam are sweet and pleasant, though not very cool.

This is unquestionably the same place to which our Savior sent the poor blind man that he might wash and be healed. You will recollect the interesting story. The man had been blind from his

birth. As Jesus was passing through the streets upon a certain day with his disciples, he saw him, and his disciples supposing that he had been made blind in consequence of some sin, asked whether it was because he had sinned, or his parents, that this great evil had come upon him. The Savior replied that it was not because of any particular sin which either he or his parents had committed, that he was born blind, but that the wonderful power and mercy of God might be shown to him. He then immediately made a clay upon the ground, with which he anointed the eyes of the blind man, and sent him to the pool of Siloam to wash.

Having done as the Savior commanded, he received his sight, and came into the city, seeing all things as clearly as if he had never been blind. How happy he must have been at that moment! How strange and beautiful everything must have appeared! And his father and mother, whom he had never seen, with what delight must he have looked upon their faces *for the first time*! And all this because he obeyed the command of the blessed Savior. If the blind man had said, when Jesus told him to go to the pool of Siloam and wash, that some other place was just as good, or that it was a long and difficult walk for a blind man to go down into the deep valley, he would not have been heal-

ed. But instead of this, he did *just the very thing* which Jesus told him to do, and thus received the precious blessing of sight, and what was worth much more, the forgiveness of all his sins. And now let me tell you of another fountain, which is far more interesting and important to you than that of Siloam. It is that fountain,

——“filled with blood,
Drawn from Emmanuel's veins.”

To that fountain all are directed to go and wash. The blind, the lame, the rich, the poor, the bond, the free, the old, the young.—It has been opened for sin and uncleanness, and whosoever will, may wash therein and be healed. The Savior is now passing by. His eye rests upon you, and he sees you blind and ruined in sin. With gentle voice he says, “Go, sinful child, go to the fountain, wash and be healed. Wash in my blood which has been shed for you. Though your sins be as scarlet, they shall be as white as snow; though they be dyed like crimson, they shall be as wool.” Yes, go. Listen to his sacred voice, and obey his commands. His promise shall not be vain. Wash in his blood, and joys of forgiven sin shall be yours, joys which no wealth, or honor, or earthly pleasure can give, or take away.

When the Savior directed the blind man to go to Siloam, he went immediately. A single day, a single hour's delay, and Jesus might have passed on his way to do good to others, and his blindness remained for ever. Do thou likewise. *Go now.*—Youth is the time to serve the Lord. The present moment is within your reach, and you may embrace the Savior. The gushing fountain flows most freely to-day—to-morrow—who shall tell what will be on the morrow?

“By cool Siloam's shady rill
The lily must decay;
The rose that blooms beneath the hills
Must shortly fade away.
“And soon, too soon, the wintry hour
Of man's maturer age
Will shake the soul with sorrow's power,
And death complete the stage.”

CHINA;

ITS POPULATION, COMMERCE, &c.

THE empire of China is estimated at 2,000 miles long by 1,500 broad, containing an area of 1,298,000 square miles, and every variety of climate between the 18th and 41st degrees of north latitude. The seacoast is of great extent, and the country possesses, in addition, to its rich alluvial plains and complete inland navigation, the advantage of numerous fine rivers, lakes, bays, harbors, and creeks, with habitable islands of various sizes, skirting nearly the whole maritime frontier.

The population of this immense territory is in a peculiar degree an agricultural, manufacturing, and commercial people, with a fixed and hereditary government, based on simple but effective principles, for merging the interest of the individual in that of the body politic—a people unfettered by the prejudice

of caste, advanced to a considerable extent in literature, art, and science, and adapted for receiving the influence of civilization and Christianity.

The following is stated to have been the progressive increase of the inhabitants of China since the commencement of the fourteenth century: A. D. 1393, population 60,545,811; 1743, population 157,301,755; 1762, population 198,214,553; 1792, population 307,467,200; 1813, population 361,693,879 including that of Tartary and the dependent provinces.

The celebrated Dr. Morrison quotes, with approbation and conviction of its veracity, the census of the provinces of China from an official work, called the *Tatsing*, published by authority in 1825, which table gives the population at 352,866,012, or to each square mile of territory 238.

The products and exports of China are various and valuable, including teas, sugar, silk, spices, drugs, dyes, porcelain, metals, &c. The principal article is tea, which, although only introduced into Europe at the commencement of the seventeenth century, A. D. 1602 to 1610, now requires about sixty millions pounds per annum to supply the increasing demand of America and Europe.

In 1669, A. D., the East India Company received their first invoice of tea, amounting to two canisters, containing 143½ lbs. In 1608 they imported 4,714 lbs.; but this quantity so glutted the market that the imports of tea during the ensuing six years amounted in all to only 318 lbs. But in the space of one hundred years, viz., from 1710 to 1810, the East India Company sales of tea amounted to 750,215,019 lbs., the value of which was £129,804,595 sterling. From the commencement of the present century to the year 1830, the tea sold by the East India Company amounted to nine hundred millions pounds weight, and the revenue paid to the British exchequer on this tea amounted to £104,856,858 sterling. This extraordinary branch of trade in an innutritious, aromatic leaf, grown on the mountains of a distant continent, employing about £4,000,000 capital, and yielding £3,000,000 annually to the English treasury, is still capable of great extension.

We have received from China various branches of art and science. The mariner's compass, the calculation of eclipses, printing, gunpowder, the smelting and combination of metals, the weaving of cotton and silk, the manufacture of porcelain, the preparation of sugar, &c., have all been known from time immemorial to the Chinese.

The Chinese carry on a considerable traffic by means of the coasting trade, for which purpose no less than 222 junks are employed.

In the year 700 A. D. Canton was first made a regular commercial port of the Chinese empire; and in the year 1400 A. D. the Chinese compelled foreigners to bring tribute every third year to Canton, where 120 houses were built for their accommodation. The Portuguese, Spanish, and Dutch, carried on a lucrative trade with China at different ports along the coast of Canton, Amoy, Macao, Ningpo, and Chusan, during the sixteenth century. In 1658 the Portuguese, after their expulsion from Ningpo, and

Chingahew, made Macao their permanent residence, after having had temporary abodes on the island for 20 years. They pay at the beginning of every year a ground rent of 50 taels of silver to the Chinese treasurer at Canton, for which a receipt is duly furnished. England turned her attention to China at the beginning of the seventeenth century; in 1670 the English East India Company had a factory on the island of Formosa, and carried on a considerable trade in those seas, particularly with the adjacent Chinese province of Fokien. In 1676, A. D., they had a factory at Amoy, from which they retired in 1680, on the contest between the Manchou Tartars and the Chinese for the imperial throne; but in 1684 the English were permitted to return to their factory at Amoy, and they remained there until 1757 A. D., when the foreign commerce of China became restricted to Canton and Macao. In 1700 the English had a factory at Chusan, and in 1702-'03 at Pulo Condore. The Dutch endeavored to expel the Portuguese from Macao in 1622, but failed, and then proceeded to Formosa, on which latter island they formed a factory in 1624, and remained there until 1661, when a pirate (Coxinga) expelled them.

The unjustifiable and sanguinary contests which the European nations so long waged against each other on the coasts of China, compelled the Chinese government to restrict them all to the port of Canton, where of late years the whole foreign commerce of the country has been conducted. But sufficient has been said to show that the inhabitants of China are not averse to intercourse with Europeans, and it is well known that the Chinese themselves carry on an extensive maritime trade, and many of their large junks annually traffic along the coasts of Cochin China and Siam to Sumatra, Java, Singapore, Borneo, &c., on which latter named island alone there are, it is said, 300,000 Chinese. Col. Burney states that there are 440,000 Chinese in Siam; and in Bankok, the capital more than 80,000. Their numbers are ascertained by the imposition of a capitation tax on every male Chinese. Forty thousand tons of Chinese shipping annually visit the ports of Siam. In the Malay states there are 20,000 Chinese employed in the smelting of metals, &c. Batavia, the capital of Java, may be said to owe its creation to the agricultural industry and mechanical skill of the vast number of Chinese who have been long settled in the island. At Singapore, Penang, Malacca, and throughout all the islands of the eastern archipelago, Chinese settlers and Chinese junks are to be found engaged in a valuable commerce.

The recent submission of the Chinese government to the English as soon as Ching-kiang-foo was taken and Nanking threatened, becomes more intelligible when we consider the relation of the places to the capital. Ching-kiang-foo is situated on the southern bank of the Yang-tse-kiang, about 170 miles above Woosung and 48 below Nanking. The river is a mile and a half across at Ching-kiang-foo. The southern section of the great canal, which extends nearly 1,000 miles from north to south through China, joins the Yang-tse-kiang in the suburbs of Ching-kiang-foo. The northern section of the canal strikes

off from the opposite side of Yang-tse-kiang, about a mile or two further up the stream. The province of Petshe-li, in which Pekin is situated, is not fertile; and the delta land through which the canal passes, between the Yang-tse-kiang and the Hoangho, is from its excessive moisture little productive. Almost immediately north of Pekin rises the high and sterile land of Central Asia. The supplies of grain, rice, tea, and other provisions for the capital, are drawn either from the fertile lands in the great basin of the Yang-tse-kiang, or from the provinces to which access is obtained by the section of the canal which is to the south of that river. As soon as the British fleet occupied Ching-kiang-foo and the river in the direction of Nanking, it commanded the entrance to the northern section of the canal, and could at any time cut off the supplies for the capital which descended the Yang-tse-kiang or are brought along the canal south of the river.

The southern section of the great canal extends in a direction a little to the east of south from Ching-kiang-foo to Hang-choo-foo (a distance of nearly 300 miles), the capital of the province Che-king, situated a few miles to the west of the inner extremity of the gulf of Che-kiang. This canal has a current to the Yang-tse-kiang; its joins that river above the low hills which are passed in ascending from the sea to Ching-kiang-foo, and is consequently on a higher level throughout than the low land next the shore. Near the Yang-tse-kiang, it is cut in the rock: in some places the excavation is 80 feet deep and scarcely more than 12 feet broad. South of Soo-choo-foo, the canal expands, and is in some places 50 or even 80 fathoms across. The water communication is continued by smaller canals from Hang-choo-foo to the gulf and to Ningpo, which is situated on the Taha river, about fourteen miles above its embouchure on the south side of the gulf and southwest of Chusan.

The whole of the tract of land surrounded by the canal, the gulf of Che-kiang, and the estuary of the Yang-tse-kiang, is a low lying tract, intersected by numerous lakes and lagoons, river channels, and artificial canals. The great Ta-too lies immediately on the north side of the canal; and the river which carries off its surplus waters, after crossing the canal, passes through a smaller and shallower lake, and empties itself into the sea at Woosung. Shanghai is situated on this river, about twelve miles above Woosung; and the river is navigable for steamboats forty-seven miles higher up—to the point where it issues from the small lake on the south of the canal.

Shanghai is the great emporium of the trade of this district with the tea provinces on the south, with the provinces of Shangtung and the coast of the Manchou Tartars on the north. Chapoo has (or at least had in 1832, according to Gutzlaff), the monopoly of the trade with Japan, Canton, and the Chinese settlements in the eastern archipelago. Between Ching-kiang-foo on the Yang-tse-kiang and Hang-choo-foo at the southern termination of the canal, are the great cities of Chang-chow-foo and Soo-choo-foo. The gentlemen on Lord Macartney's embassy describe the former as a large and wealthy

trading town; they were three hours in passing through the latter; and its numerous canals, and the rich colors of its wealthy abodes, reminded the beholders of Venice. The shops of Hong-choo-foo were compared by them to those of London; and its population was compared by the Jesuits toward the close of the seventeenth century with that of Paris.

The Chinese ports now thrown open in addition to Canton, are, Amoy, about $24^{\circ} 27'$ north latitude; an excellent harbor, with a numerous and wealthy trading population. Foo-choo-foo, the capital of the province of Fookien, is about thirty miles above Hoo-kiang. The population can scarcely be under 40,000. The best tea plantations are in the interior of Poo-kien; and Foo-choo-foo is the emporium of the black tea trade. The principal articles of export are tea, timber for building, tobacco, and cotton. The situation of Ningpo (where the British had a factory till 1759), has been already noticed. Lindsday assigns to it between two and three hundred thousand inhabitants. Shanghai; its position and trade have also been noticed above. The climate at Shanghai and Ningpo, the most northerly of these ports, is oppressively hot in summer; but the winters are very severe, and woolen cloths in great demand. The currents in the estuary of the Yang-tse-kiang, among the small islands of the Chusan group, and along the intervening shores, are strong, complicated, and as yet but imperfectly known.

AMERICAN BIOGRAPHY.

ROGER SHERMAN.

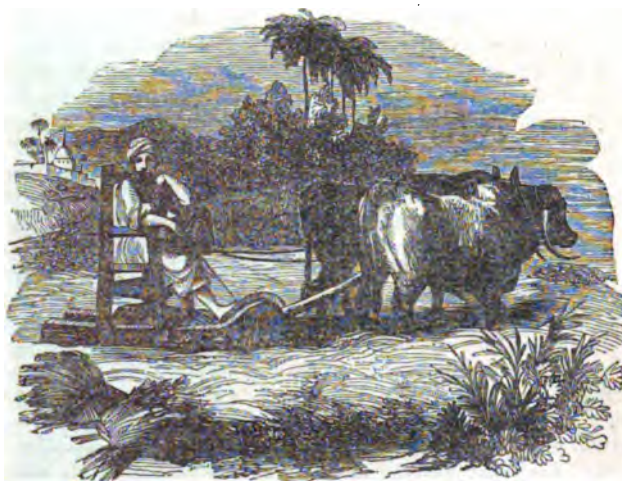
ROGER SHERMAN was the son of a Massachusetts farmer, and received only the advantages which an old-fashioned country district school afforded. He was bound to a shoemaker; went diligently through the elements of his inglorious trade, as some then deemed it, and continued to work at his bench after he was twenty-two years of age. It is recorded to his credit and to the shame of some young men in our times, that he was accustomed to study or read, while upon the bench, with a book open before him. The elder Mr. Sherman dying when the young shoemaker was yet in his apprenticeship, the care of the numerous family devolved solely upon Roger, who was only nineteen years of age. The charge was cheerfully and faithfully acquitted. His old mother lived to a long age, and her declining years were soothed by the endearing attentions of her affectionate son. Two brothers younger than himself were enabled, with the proffered aid of their self-denying brother, to obtain liberal educations, and in after-life, rewarded his generous munificence, by discharging faithfully their duties as clergymen. An older brother of young Sherman, having settled in New Milford, Ct., it was judged wise for the family to remove thither. The whole journey was performed by young Sherman with his tools upon his back. A good lesson it would be for some young dandy loafers of the present day, who can not go two or three miles without an expensive buggy or sleigh. Learn also instruc-

tion from the kindness of Sherman to his aged mother and tender brothers, ye who can scarcely keep from debt with only *yourselves* to cloth and feed, while you at the same time receive far greater wages, and are incomparably better acquainted with your trades than Sherman could have been. Soon after the family removed to New Milford, Sherman entered the store of his elder brother as joint partner in trade. He was not long in becoming distinguished in the county of Litchfield as a young man of talent and great mathematical skill. Two years after his settlement here, he received the appointment of county surveyor. The next three years were spent in supplying astronomical calculations for an almanac published in this city. We shall be pardoned for inserting the following circumstance, which we have in "Goodrich's American Biography" in the life of Sherman:

"While yet a young man, and it is believed before he had relinquished his mechanical occupation, he had occasion to go to a neighboring town to transact some business for himself. A short time previous to this, a neighbor of his, in settling the affairs of a person deceased, became involved in a difficulty which required the assistance of legal counsel. The neighbor stated the case to young Sherman, and authorized him to seek the advice of the lawyer of the town to which he was going. As the subject was not without intricacy, Sherman committed the case to paper, and on his arrival in the town proceeded with his manuscript to the lawyer's office. In stating the case to the lawyer, he had frequent occasion to recur to his manuscript. This was noticed by the lawyer, and as it was necessary to present a petition in the case to some court, Sherman was requested to leave the paper as an assistance in framing the petition. The modesty of young Sherman would scarcely permit him to comply with this request. 'The paper,' he said 'was only a memorandum drawn by himself to assist his memory.' He gave it, however, into the hands of the lawyer, who read it with surprise. He found it to contain a clear statement of the case, and remarked that with some slight legal alterations it would equal any petition which he himself could draught. The conversation now passed to the situation of young Sherman. The lawyer urged him seriously to think upon the profession of law. A new direction was given to his energies and a new impulse to his thoughts."

In 1754 he entered, says Mr. Goodrich, upon a professional career, in which few have attained to greater honor and distinction. From this time Sherman went up with speed. He received from Yale College the degree of A. M., and was honored with a call to the Assembly of the State.

A GOOD THING.—The following, although brief, is beautiful and comprehensive: "Every fly, every pebble, and every flower, are tutors in the great school of nature, to instruct the mind and improve the heart. The four elements are the four volumes, in which all the works are written. Every man has in his own life follies enough; in his own mind troubles enough; in the performance of his duties, deficiencies enough; without being curious about the affairs of others."



Threshing by the Sledge.

MODES OF THRESHING CORN IN THE EAST.

BESIDES the usual effects of climate on the wild as well as cultivated productions of different countries, its influence is of course very important on all the ordinary branches of agricultural industry. Those who are engaged in such pursuits can not fail to be interested in studying the different modes by which all accomplish the same ultimate end, whatever may be the diversities of soil and climate; and this kind of knowledge may not unfrequently prove useful to the practical farmer, by affording hints which he may turn to profitable account. The most careless observer may draw some inferences, of wider and more extensive signification than might be first imagined, by attentively considering the causes which have given rise to modifications in those practices of husbandry to which he has been accustomed. In a country which has not yet been settled, it is said—with some little degree of exaggeration, perhaps—that it is cheaper to rear a herd of cattle than a brood of chickens, for the one picks up a subsistence with scarcely any labor on the part of the owner, while the latter must be fed with the produce of cultivated land; and so simple a fact as this, if pursued to its causes, will unfold not a few of the circumstances which constitute the difference between a country that has been fully peopled for ages, and one in which the virgin soil was only stirred yesterday. We may take another example of the value of noticing not only *differences*, but their *causes*: The traveller who passes through the countries of the northern and northeastern parts of Europe, will be apt to ascribe to them the possession of greater wealth than they really enjoy. The farm-houses are surrounded with extensive out-buildings, which appear to be only the result of capital accumulated in a form calculated to insure a large proportion of physical comfort. But the climate renders it necessary to provide buildings to contain all the live-stock, and all the hay, corn, and provender for their support during a considerable portion of the year. Besides the house occupied by the owner of the land, it is surrounded by the cot-

tages of his laborers, ranges of barns, stables, cow-houses, sheep-houses, granaries, cart-sheds, and harness-rooms, to an extent, according to Mr. Jacob, "more than five times as great as would be required in England for the same extent of land." The climate of this country is neither so rigorous as to prevent live-stock continuing in the open air throughout the winter, nor to prevent green food remaining on the land for them while this season lasts; and thus there is a saving in the erection of out-buildings which the agriculturist elsewhere finds it necessary to provide. As our account of the modes of threshing adopted in the East will be short, the preceding remarks may, perhaps, be pardoned.

In Syria, Palestine, Western Asia generally, and various other parts of the world, the threshing-floor is in the open air, and is such a level and hard piece of ground as can be found nearest the harvest-field. If on the top of a hill, it is preferred, for the advantage of the subsequent winnowing. Such threshing-floors were common almost everywhere, being only covered in those countries where showers are frequent in the time of harvest.

In such floors, the separation of the grain from the straw was effected by the different processes which remain to be described. 1. By the treading of cattle. This appears to have been the most ancient practice for the larger grains, of wheat, barley, and rye. It is in fact the only process of threshing to which allusion is made in the books of Moses, as in the precept, "Thou shalt not muzzle the ox that treadeth out the corn," an injunction conformable to the existing practice of all the nations of the East, none of whom, whatever be the mode of threshing, muzzle the animals which labor in it. Threshing by the feet of cattle was also the practice in ancient Egypt. Homer mentions no other mode of threshing than by driving oxen over the corn. He compares the slaughter made by the horses and chariot of Achilles to the beating out of grain by the trampling of oxen. It was also one of the modes in use among the Romans. Among them, however, horses were preferred to oxen for this work, and there can be no doubt of their su-

perior adaptation to it; but the Hebrews for many ages had no horses, and when they had, did not soon learn to employ them in any agricultural labor. Neither did the Egyptians. But horses appear to have been employed for threshing in the time of Isaiah.

At the present time, the custom of threshing by the treading of animals is common in Northern Africa and several parts of the East; but horses are more employed than oxen. In this case, a strong post is planted in the centre of the threshing-floor, with a moveable wooden ring at top, through which passes the cord that yokes the animals, and which can be lengthened or shortened at pleasure, so as to make them move round in a wider or narrower compass. So Shaw, in describing the practice of the Moors and Arabs of Barbary, states: "These nations continue to tread out their corn after the primitive custom of the East. Instead of beeves, they frequently make use of mules and horses, by tying,



Threshing by Horses.

in like manner, by the neck, three or four of them together, and whipping them afterward round about the *nedders*, as they call the threshing-floors, where the sheaves lie open and expanded, in the same manner as they are placed and prepared by us for threshing. This, indeed, is a much quicker way than ours, though less cleanly; for as it is performed in the open air, upon any round level plot of ground daubed over with cow-manure to prevent as much as possible the earth, sand, or gravel, from rising, a great quantity of these, notwithstanding this precaution, must be unavoidably taken up with the grain. At the same time, the straw, which has been taken notice of as their chief and only fodder, is hereby shattered to pieces, a circumstance very pertinently alluded to in 2 Kings, xiii. 7, where the king of Syria is said to have made the Israelites 'like the dust by threshing.'

2. Another kind of threshing is by the *drag*, being a strong frame of planks, or a large block of wood, armed and roughened at the bottom with flints or pieces of iron, and drawn by oxen, mules, or horses, over the corn-sheaves spread on the floor, the driver sitting upon it when its form allowed him to do so. This corresponds with the notice which Varro takes of the *tribulum*, and he says that when the driver did not sit on the machine, a weight was placed upon it. This very simple machine is evidently that which Laborde saw actually in use in Syria, and of which



Threshing by the Drag.

he gives the representation which we have copied in the preceding engraving. A corn-drag, somewhat less rude than this, is now generally used in Syria and Asia Minor. A figure of it is given in the recent work on that country by Mr. Fellowes, who describes it as designed for the joint purpose of threshing and of cutting the straw: "It is very primitive and curious, consisting of a thick plank of timber, flat on the ground, with another smaller one inclining upward, to which the animal is attached for the purpose of dragging it over the corn, which is spread out on the hard, rocky ground; the flat under-side is stuck full of flints or hard cutting stones, arranged in the form of the palate or rough tongue of the cow. The roller is the trunk of a tree, often weighted by the driver riding on it. It is dragged over the ground, but does not revolve." Dr. Wilde, who travelled in Palestine too early to see the act of threshing, notices a similar machine which he saw in a vaulted granary near Tyre. Both these travellers identify this, very rightly, with the threshing instrument mentioned by Isaiah, xli. 15, and the *tribulum* of Virgil.

3. A third mode of threshing was by what is called in Scripture "the wain," more properly "*the sledge*," and which is still employed in Egypt and some parts of Western Asia. This sledge is fixed upon two or three wooden rollers, armed with several iron rings, with serrated edges, so sharp as to cut the straw. This machine, which is drawn by oxen, mules, or asses, is easily driven by a man seated on the sledge, and as it passes round in a circle over the corn spread beneath, the grain, by repeated operation, is trodden out, while the straw is chopped by the iron rings. This corresponds to a variety of the *tribulum* mentioned by Varro, and which he described as "a plank with little rollers in place of teeth." He adds: "In Hither Spain (*Hispania Citeriore*) and other places, a man sits upon this machine, and drives the cattle that draw it." He says that this was called the *posicilum Panicum*, or Carthaginian wain; and as the Carthaginians doubtless derived it from their Phenician or Canaanitish ancestors, a very proximate origin is found for it. It was undoubtedly in use among the Jews.

4. The *flail* is and has been only used in ancient times, and still in eastern parts, with grains of those sorts in which the ears only are reaped, or when the separation of the grain from the ear is the sole object desired. We find from the Scriptures,* that the

* Isaiah xxviii. 27, 28.

flail was confined, among the ancient Hebrews, to the threshing of the smaller grains, such as vetches, dill, or cummin, in which no operation upon the stalk was desired. The passage of Scripture to which we have just referred contains distinct allusions to all the processes of threshing which have been described, and may here be adduced, as given in the improved translation of Bishop Lowth:—

“The dill is not beaten out with the *corn-drag* ;
Nor is the *wheel of the wain* made to turn upon the cummin.
But the dill is beaten out with the *staff* ;
And the cummin with the *flail* : but
The bread-corn with the *threshing-wain* :
And not for ever will he continue thus to thresh it ;
Nor to vex it with the wheel of his wain ;
Nor to bruise it with the *hoofs of his cattle*.”

It is seen how clearly the preceding statements illustrate this interesting passage of Scripture.

THE HONEY BEE AND THE ANT.

WE have seen how wonderfully the bee works according to rules discovered by man, thousands of years after the insect had been following them with perfect accuracy ; but the same little animal appears to be acquainted with principles of which we are still ignorant. We can, by crossing, vary the forms of cattle with astonishing nicety, but we have no means of altering the nature of an animal once born, by means of treatment and feeding ; this power is, however, undeniably possessed by the bees, for when the queen bee is lost by death or otherwise, they choose a grub from among those which are born for workers, make three cells into one, and placing the grub there, they build a tube around it, and afterward build another cell of pyramidal form, into which the grub grows ; they then feed it with peculiar food, and tend it with extreme care, and it becomes when transformed from the worm to the fly, not a worker, but a queen-bee. These singular insects resemble our own species in one of our worst propensities—the disposition to war ; but their attention to their sovereign is equally extraordinary, although of a somewhat capricious kind. In a few hours after their queen is lost, the whole hive is in a state of utter confusion ; a singular humming is heard, and the bees are seen moving all over the combs with great rapidity ; the news spreads quickly, and when the queen is restored, quiet immediately succeeds ; but if another queen is put upon them, they instantly discover the trick, and surrounding her, they either suffocate or starve her to death. This happens if the false queen is introduced within a few hours after the first is lost or removed ; but if a day have elapsed, they will receive any queen and obey her.

But the labors and policy of the ants, when closely examined, are still more wonderful, perhaps, than those of the bees. Their nest is a city consisting of dwelling places, halls, streets, and squares, into which the streets open ; the food they principally like, is the honey which comes from another insect found in their neighborhood, which they, generally speaking, bring home from day to day as they want it ; late discoveries have shown that they do not eat grain, but live almost entirely on animal food and this honey.

Some kinds of ants have the foresight to bring home the insects on whose honey they feed, and keep them in particular cells, where they guard them to prevent their escape, and feed them with proper vegetable matter, which they do not eat themselves ; nay, they obtain the eggs of these insects and superintend their hatching, and then rear the young insect until it becomes capable of supplying the desired honey ; sometimes removing them to the strongest parts of their nest, where there are cells apparently fortified for protecting them from invasion ; and in these cells the insects are kept to supply the wants of the ants which compose the population of the city. And it is a most singular circumstance in the economy of nature, that the degree of cold at which the ant becomes torpid, is also that at which this insect falls into the same state ; this being considerably below the freezing point, they require food the greater part of the winter, and if the insects on which they depend for food were not kept alive during the cold in which the ants can move about, the latter would be without the means of subsistence.

How trifling soever this little animal may appear in our climate, there are few more formidable creatures than the ant of some tropical countries. A French traveller has described one of their cities, and were not the account confirmed by various testimonies, it might seem exaggerated. He observed at a great distance what seemed a lofty structure, and was informed by his guide that it consisted of an ant-hill which could not be approached without danger of being devoured. Its height was from 15 to 20 feet, and its base was 30 or 40 feet square, the sides inclining like the lower part of a pyramid, with the point cut off. He was informed that it became necessary to destroy these nests, by raising a sufficient force to dig a trench all around and fill it with faggots which are afterward set on fire, and then battering with cannon from a distance, to drive the insects out and make them run into the flames. These facts respecting the ant and the bee, may be relied on as authentic ; they are the result of very late observation and experiments, made with great accuracy by several most worthy and intelligent men.

The species of ant, *formica saccharivora*, which once appeared in such torrents in the island of Grenada, and destroyed the sugar-cane so completely by undermining their roots, that a reward of twenty thousand pounds sterling was offered to any one who should discover an effectual mode of destroying them, descended the hills in a flood, and filled not only the plantations, but the road for miles. Domestic quadrupeds perished, and rats, mice, and reptiles, were destroyed by them ; and corn birds were so harassed when they alighted on the ground as quickly to die. Nothing opposed their march ; they blindly rushed into the streams and were drowned in such countless millions that the aggregation of their tiny carcasses jammed up the waters, and formed a bridge for others to pass over. The large fires lighted in their paths were speedily extinguished by the rush of the masses, and had not Providence swept them away on the torrents of a terrible hurricane in 1680, everything must have fallen before them.—BROUGHAM.



RACHEL'S TOMB.

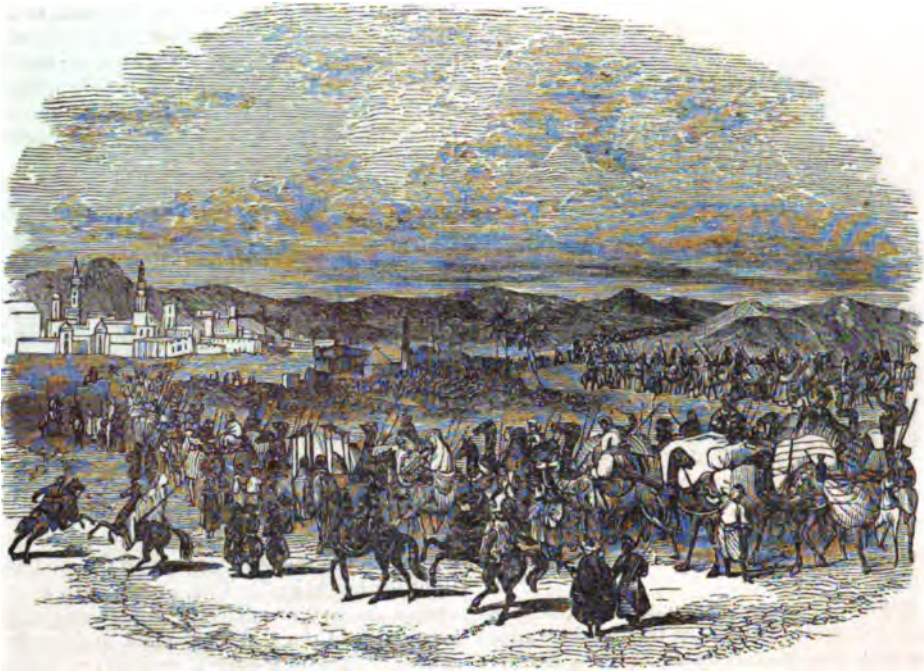
"That is the pillar of Rachel's grave unto this day."

GEN. XXXV. 20.

MANY interesting considerations, on which we can not here expatiate, result from tracing the various methods which were resorted to in order to preserve the memory of events in the primitive times, when the art of writing was either unknown or had not yet been brought to bear on the usages of civil life. The progress of writing was manifestly slow; and after the art was well known, the ancient commemorative practices were still for a long time retained. We have seen the patriarchs erecting altars where the Lord had appeared to them (Genesis xii. 7, xxvi. 25, xxxv. 7), planting woods (Genesis xxi. 31, 33), and setting up monuments in memory of the principal events of their lives; and for the same purpose giving characteristic names to the spots where such events took place. Instances of the last description have been too frequent to require indication. The profane writers, and the existing usages in many countries, furnish examples of the same custom. The ancient fragment of Sanchoniathon informs us that rude stones and posts were the first memorials of the Phœnician people. Near Cadiz, heaps of stone used to be indicated as the famous "pillars" which are said to have commemorated the expedition of Hercules to Spain. The ancient people of the north preserved the memory of events by placing stones of extraordinary size in particular places; and this method is still used by the American savages, among whom writing is unknown. The manner in which such monuments were made subservient to this purpose is clearly described in Josh. iv. Parents explained to their children the object of such erections, and instructed them in the facts which gave occasion to them. In this way tradition supplied in some degree the place of written records. The early sepulchral pillars came under the same class of commemorative erections. They do not appear to have borne any inscriptions in their primitive use, although in after-times they did. Burder collects instances from Homer, of pillars erected over graves. Paris is rep-

resented, when going to shoot Diomed, as crouching behind the pillar which had been erected upon or near the grave of Ilus. So, also, at the funeral of Elpenor, we find Ulysses and his companions forming a tumulus and erecting a pillar; and in another place, a heap of earth and a pillar are mentioned as the tokens of respect paid to the dead.

The reputed tomb of Rachel, near Ephrath, is thus mentioned by Mr. Carne, in his "Recollections of the East:"—"The spot is as wild and solitary as can well be conceived: no palms or cypresses give their shelter from the blast; not a single tree spreads its shade where the ashes of the beautiful mother of Israel rests. Yet there is something in this sepulchre in the wilderness that excites a deeper interest than more splendid or revered ones. The tombs of Zacharias and Absalom, in the valley of Jehoshaphat, or that of the kings in the plain of Jeremiah, the traveller looks at with careless indifference; beside that of Rachel his fancy wanders to the land of the people of the East; to the power of beauty that could so long make banishment sweet; to the devoted companion of the wanderer, who deemed all troubles light for her sake." The Turks have generally enclosed the real or supposed sepulchres of the chief characters of the Old Testament in some building or other: that which covers the tomb of Rachel is of a very humble description. It is a small square building surmounted by a dome, and resembling the common tombs of sheikhs and saints in Arabia and Egypt. Mr. Buckingham, who has particularly described it, says: "We entered it on the south side by an aperture through which it was difficult to crawl, as it has no door-way; and found on the inside a square mass of masonry in the centre, built up from the floor nearly to the roof, and of such a size as to leave barely a narrow passage for walking round it. It is plastered with white stucco on the outer surface; and is sufficiently large and high to enclose within it any ancient pillar that might have been found on the grave of Rachel." As this interior central mass is certainly different from anything we have ourselves ever witnessed in such structures, we are disposed to concur with Mr. Buckingham in thinking it probable that it was originally intended to enclose a pillar, or fragment of one, which tradition had pointed out as the pillar of Rachel's grave; and that the present structure was afterward built over the whole by the Mohammedans, who do not yield to the Jews or Christians in their veneration for such places. The precincts of the sepulchre are now used by the Turks as a cemetery. The desire which these people feel that their ashes may rest in this spot is described by Mr. Carne, as "singular and extreme." He adds: "All round this simple tomb lie thickly strewn the graves of the Mussulmans. No slender pillars of wood or stone, with inscriptions in letters of gold, are here; not a single memorial which this people are otherwise so fond of erecting in their cemeteries. It seems to be sufficient that they are placed beneath the favorite sod: the small and numerous mounds, over which the survivor sometimes comes and weeps, mark the places of the graves."



AN ORIENTAL MIGRATION.

IN looking over the accounts of the earlier inhabitants of Palestine, it is impossible not to be struck with the great similarity of their manners to those of the present Bedouin Arabs, who, living in tents or wandering over the plains in search of pasture for their herds, present an exact picture of their progenitors, whose deeds have been preserved in the holy writings. We will here select that part which details the departure of Abraham from his family at the command of God. Passing over the extended but interesting account of the patriarch's early life, derived from the Scriptures, and from the writings and tradition of the Arabians and Jews, we come at once to that period of his life when, having attained "the ripe middle age of seventy-five years" (the great age of the antediluvians had not yet dwindled down to the present standard of man's life, which appears to have become fixed at or before the time of David), he was honored, as it would seem for the second time, with the express intimations of the divine intention respecting his conduct.

The first command* required him to leave his country and his kindred, or his natural connexions, in the general sense, and was not considered necessarily to involve a separation from his immediate family; but the second call was more precise and stringent, requiring him to leave not only his country and his kindred, but also his "father's house." The Divine intentions being confined to his posterity, which as yet had no existence—for he had no child, his wife being barren—it was judged right to isolate him completely from all such natural and social ties

as might interfere with this object. This was hard to bear and God knew it was; and, therefore, although it was designed that his faith should be tried to the uttermost, and made manifest as an example to his posterity and the people of future ages and distant lands, these trials did not come upon him in one overwhelming demand, but were made successive after intervals of repose,—rising one upon another, as his trust grew progressively stronger in that Great Being, the special object of whose care he had become. We shall see this throughout the history of this patriarch.

When the patriarch received his first call, the circumstances in which he was then placed, and the privilege of being still permitted to remain with all those who were, by natural ties, dearest to him, probably made the commanded migration indifferent or even desirable to him, and therefore no promises with reference to the future are held forth to encourage his obedience. But now, when he seems to have been more prosperously and happily situated, saving the recent grief of his father's death, the command to depart is accompanied, for the first time, by that high promise which was destined to cheer and bless his remaining life. This call and the annexed promise are thus given in the scriptural narrative: "Then the Lord said unto Abram, Depart from thy land, and from thy kindred, *and from thy father's house*, unto the land which I will show thee. And I will make of thee a great nation, and I will bless thee and make thy name great, and thou shalt be a blessing; and I will bless them that bless thee, and curse them that curse thee; and in thee shall all the families of the earth be blessed." (Gen. xii. 1-3.)

The land to which he was to go is not named, either on this or the former occasion; but the differ-

* The first command to Abraham is assumed on the authority of Josephus. Antiq. i. c. 6.



Women on Camels.

ence in the form of expression may have sufficed to intimate to Abram, that the country appointed for his sojourning would now be more distinctly indicated to him.

So Abram separated himself from the household of Nabor, his only surviving brother, and departed, not at that time knowing the point of his ultimate destination, but relying upon the guidance of the Divine Being whose command he was obeying. Lot, the son of his dead brother Haran, and brother to his wife Sarai, joined himself to him. For this no reason is given, but may be found in the fact, that, while Abraham remained without issue, Lot was his natural heir; besides, it appears that Lot entertained an exclusive belief in the God of Abram, which there is some ground for suspecting that Nabor and his household did not. Lot had a household and property of his own, and the united parties must have formed a goodly pastoral company, such as may still be often met with crossing the plains and deserts of the east in search of new pastures. We are told that they went forth "with all the substance they had gathered, and the souls they had gotten in Haran," which last clause applies to the "little ones" of their households—being the children which had been born of their slaves during the fifteen years of their stay in Haran.

Those who are, from reading or travelled observation, conversant with the existing manners of the Asiatic pastoral tribes,—as the Arabians and the Tartars,—can easily form in their minds a picture of this great migrating party. Under the conduct of their venerable emir, and the active direction and control of his principal servants, we behold, from the distance, a lengthened dark line stretching across the plain, or winding among the valleys, or creeping down the narrow pathway on the mountain-side. That in this line there are hosts of camels we know afar off, by the grotesque outline which the figures of these animals make, their tall shapes and their

length of neck; and that the less distinguishable mass which appears in motion on the surface of the ground is composed of flocks of sheep, and perhaps goats, we can only infer from circumstances. On approaching nearer we find that all this is true, and that, moreover, many of the camels are laden with the tents, and with the few utensils and needments which the dwellers in tents require; and if the natural condition of the traversed country be such as to render the precaution necessary some of the animals may be seen bearing provisions and skins of water. The baggage-camels follow each other with steady and heavy tread, in files, the halter of those that follow being tied to the harness of those that precede, so that the foremost only needs a rider to direct his course; but nevertheless, women, children, and old men, are seen mounted on the other burdens which some of them bear. These are slaves, retainers, and other persons not actively engaged in the conduct of the party, and not of sufficient consequence to ride on saddled dromedaries. Such are reserved for the chiefs of the party, their women, children, relatives, and friends, and are not, unless it happen for convenience, strung together like the drudging animals which bear the heavier burdens.

For the youths and men of vigorous age, the slaves and shepherds, there is active employment in directing the orderly progress of the flocks, and in correcting the irregularities, friskings, and breaches which sometimes occur. In this service they are assisted by a stout staff, crooked at one end,—the origin of the pastoral and episcopal crook,—which, however, is but sparingly used by those most accustomed to the flocks, their familiar voices being in general quite sufficient to control and guide the sheep; and of their voices they make no stinted use, but exert them liberally in the incessant utterance of loud cries and shouts, reproaches, warnings, and encouragements. The feeble of the flock are very tenderly dealt with;



Eastern Shepherds.

the progress of the whole is but slow, on account of the lambs, and the ewes great with young; and some of the shepherds may be seen bearing in their arms the weaker lambs of the flock, or those which have been lately weaned. The men engaged in these services are on foot, though a few of the principal may be on camels, or, preferably on asses, if there be any of those animals in the troop. The whole conduct of the oriental shepherds supplies many beautiful allusions and metaphors to the sacred writers of the Hebrews, as where the prophet says that the good shepherd "shall gather the lambs with his arm, and carry them in his bosom, and shall gently lead those that are with young." Isaiah xl. 11.

We have introduced this short description of the pastoral migrations with the view of enabling the reader to form some idea, not only of this migration of Abraham and Lot, but of the various other removals which are so frequently mentioned in the history of the pastoral patriarchs.

EDUCABILITY OF ANIMALS.

THIS is a subject on which, as far as we are aware, no attention has been bestowed in the way of scientific investigation. Yet such illustrations of it have been given, as would seem to point it out as a rich field for the philosophical naturalist. Regarding the endowments of animals as we generally do, it would be scarcely possible for us to believe some of the anecdotes which have been related on this point, if they were not, in general, authenticated in such a way as to preclude skepticism.

In the latter part of the last century, one Bisset, a native of Perth, by trade a shoemaker, having applied himself with great perseverance to the teaching of animals, succeeded in making a set of cats play in harmony on the dulcimer, uniting their voices to the tones of the instrument; and this singular orchestra was exhibited, to the perfect satisfaction of the public,

for a succession of nights, in the Haymarket theatre. He it was who trained a "learned pig," which was exhibited in every part of England. At a somewhat earlier period, a Saxon peasant boy trained a dog to the pronunciation of words. The boy had observed in the dog's voice an indistinct resemblance to certain sounds of the human voice, and was thus prompted to endeavor to make him speak. The animal was three years old at the beginning of his instruction, a circumstance which must have been unfavorable to the object; yet, by dint of great labor and perseverance, in three years the boy had taught it to articulate thirty words. It used to astonish its visitors by calling for tea, coffee, chocolate, &c.; but it is proper to remark that it required the words to be pronounced by its master beforehand, and it never appeared to become quite reconciled to the exhibitions which it was forced to make. The learned Leibnitz reported on this wonderful animal to the French Academy, attesting that he had seen the dog and heard it speak; so that there does not appear the slightest ground for doubting the fact, such as it was. All doubt on the question of possibility may, indeed, be considered as set at rest by the recent exhibition of the educated dogs in London—animals which could play at dominoes and chess, and even indicate when their adversaries made false moves. These creatures were visited and *played with* by thousands, and we never have heard that a deception of any kind as to the reality of their acquired powers was detected.

Laying aside such extraordinary examples as these, the ordinary training conferred on horses, dogs, and other domesticated animals, seems to be sufficient to establish the general fact of animal educability. We have no more forcible illustrations of the principle than in the uses which are now made of certain of the canine tribe in rural sports. The pointer, setter, springing spaniel, and all that class of dogs, are understood to be descended from one stock, the Spanish spaniel, with a slight crossing from the fox-hound, for the sake of improving the speed. The original animal may be considered as a record of the original

powers, to which everything else must be regarded as an addition made by human training. Now, the original animal is only gifted by nature with a fine scent for game, and a disposition to make a momentary pause on seeing it, for the purpose of springing upon it. Man has converted this inclination to a temporary pause into a habit of making a full stop, and the animal, instead of gratifying his destructive tendency by flying upon the game, has been trained to be contented with witnessing a vicarious execution by the gun of his master.

It is a mistake to suppose that only the spaniel tribe is capable of serving sportsmen in the capacity of pointers and setters. There are other classes of dogs which perseverance would enable, to a certain extent, to act in the same way. Gervase Markham, who wrote on sports in the sixteenth century, speaks of having seen dogs of the bastard tumbler kind adapted to act as setters, though not so well as those of the spaniel kind. It has even been elicited in another and very different class of animals—the hog. Some years ago, Mr. Toomer, game-keeper to Sir Henry Mildmay, bethought him of teaching a pig to act as a pointer, having been struck by the scenting powers of the animal in its search for palatable roots under ground. He began by allowing a young female pig to accompany his pointers in their breaking lessons to the field. Within a fortnight, to his own surprise, she was able to hunt and point partridges and rabbits. There being an abundance of these creatures near the keeper's lodge, her education advanced rapidly by frequent exercise, and in a few weeks she was able to retrieve game as well as the best pointer. *Slut*, as this extraordinary animal was called, was considered to have a more acute scent than any pointer in the charge of the keeper; and it was a kennel of the highest character. They hunted her principally on moors and heaths; and it often happened, that when left behind, she would come of her own accord and join the pointers. "She has often stood a jack snipe when all the pointers had passed it; she would back the dogs when they pointed, but the dogs refused to back her until spoke to—Toomer's dogs being all trained to make a general halt when the word was given, whether any dog pointed or not, so that she has been frequently standing in the midst of a field of pointers. In consequence of the dogs being not much inclined to hunt when she was with them, she did not very often accompany them, except for the novelty. Her pace was mostly a trot; she was seldom known to gallop, except when called to go out shooting; she would then come home off the forest at full stretch, and be as much elated as a dog at being shown the gun. She always expressed great pleasure when game, either dead or living was placed before her. She has frequently stood a single partridge at forty yards' distance, her nose in a direct line to the bird; after standing some considerable time, she would drop like a setter, still keeping her nose in an exact line, and would continue in that position until the game moved; if it took wing, she would come up to the place, and draw slowly after it; and when the bird dropped, she would stand it as before."

These facts, together with what common observation presents to us in domesticated parrots, black-birds, ravens, magpies, monkeys, &c., place the educability of animals upon a basis, in our opinion, not to be shaken. But the most wonderful thing, and the most convincing part of the proof, remains, in the fact of the transmission of *acquired qualities* by animals to progeny. The habit which education has conferred upon the pointer appears in his puppy, who may be seen earnestly standing at swallows and pigeons in a farm-yard, before he has ever once seen such a thing done by his seniors, or received the least instruction. Here only the object is amiss; the act itself is perfect. As may be readily supposed, the puppy of a race of English pointers can be trained to the whole business of the field, in one tenth of the time which the most experienced breaker would require to effect any improvement upon the simple instinct of *the pause* in an original Spanish spaniel. On the subject of the hereditary transmission of acquired qualities by animals, we have some curious information from the venerable naturalist, Mr. T. A. Knight.

In a communication to the Royal Society, in 1807, Mr. Knight remarked the disposition of bees to seek for cavities in trees, where such existed, as places to swarm to, and surmised, that their taking up with the hives offered them is a result of domestication, which becomes inherent in those which have for several generations been under the care of man. To support this view, he cited several other instances of domesticated animals inheriting the acquired habits of their parents. "In all animals," he says, "this is observable; but in the dog it exists to a wonderful extent; and the offspring appears to inherit not only the passions and propensities, but even the resentments, of the family from which it springs. I ascertained that a terrier, whose parents had been in the habit of fighting with polecats, will instantly show every mark of anger when he first perceives the scent of that animal, though the animal itself be wholly concealed from his sight. A young spaniel brought up with the terriers showed no marks of emotion at the scent of the polecat, but it pursued a woodcock, the first time it saw one with clamor and exultation: and a young pointer, which I am certain had never seen a partridge, stood trembling with anxiety, its eyes fixed, and its muscles rigid, when conducted into the midst of a covey of those birds. Yet each of these dogs are mere varieties of the same species, and to that species none of these habits are given by nature. The peculiarities of character can therefore be traced to no other source than the acquired habits of the parents, which are inherited by the offspring, and become what I call *instinctive hereditary propensities*."

It appears from another communication made by Mr. Knight to the same society in 1837, that he had then been pursuing investigations on this subject for nearly sixty years. He proceeds in that communication to give a general account of his investigations. "At the period," he says, "at which my experiments commenced, well-bred and well-taught springing spaniels were abundant and I readily obtained posses-

sion of as many as I wanted. I had at first no other object than that of obtaining dogs of great excellence; but within a very short time, some facts came under my observation which very strongly arrested my attention. In several instances, young and wholly inexperienced dogs appeared very nearly as expert in finding woodcocks as their experienced parents. The woods in which I was accustomed to shoot did not contain pheasants, nor much game of any other kind, and I therefore resolved never to shoot at anything except woodcocks, conceiving that by so doing the hereditary propensities above mentioned would become more obvious and decided in the young and untaught animals; and I had the satisfaction, in more than one instance, to see some of these find as many woodcocks, and give tongue as correctly, as the best of my older dogs.

"Woodcocks are driven in frosty weather, as is well known, to seek their food in springs and rills of unfrozen water, and I found that my old dogs knew about as well as I did the degree of frost which would drive the woodcocks to such places; and this knowledge proved very troublesome to me, for I could not sufficiently restrain them. I therefore left the old experienced dogs at home, and took only the wholly inexperienced young dogs; but, to my astonishment, some of these, in several instances, confined themselves as closely to the unfrozen grounds as their parents would have done. When I first observed this, I suspected that woodcocks might have been upon the unfrozen ground during the preceding night; but I could not discover (as I think I should have done had this been the case) any traces of their having been there; and as I could not do so, I was led to conclude that the young dogs were guided by feelings and propensities similar to those of their parents.

The subjects of my observation in these cases were all the offspring of well-instructed parents, of five or six years old or more; and I thought it not improbable that instinctive hereditary propensities might be stronger in these than in the offspring of very young and inexperienced parents. Experience proved this opinion to be well founded, and led me to believe that these propensities might be made to cease to exist, and others to be given; and that the same breed of dogs which displayed so strongly an hereditary disposition to hunt after woodcocks, might be made ultimately to display a similar propensity to hunt after truffles; and it may, I think, be reasonably doubted whether any dog having the habits and propensities of the springing spaniel would ever have been known, if the art of shooting birds on the wing had not been acquired.

I possessed one young spaniel, of which the male parent, apparently a well-bred springing spaniel, had been taught to do a great number of extraordinary tricks, and of which the female parent was a well-bred springing spaniel; the puppy had been taught, before it came into my possession, a part of the accomplishments of its male parent. In one instance I had walked out with my gun and a servant, without any dog; and having seen a woodcock, I sent for the dog above mentioned, which the servant brought to

me. A month afterward, I sent my servant for it again, under similar circumstances, when it acted as if it had inferred that the track by which the servant had come from me would lead it to me. It left my servant within twenty yards of my house, and was with me in a very few minutes, though the distance which it had to run exceeded a mile. I repeated this experiment at different times, and after considerable intervals, and uniformly with the same result, the dog always coming to me without the servant. I could mention several other instances, nearly as singular, of the sagacity of this animal, which I imagined to have derived its extraordinary powers in some degree from the highly cultivated intellect of its male parent."

Mr. Knight states, that in sixty years he had observed the woodcock tribe become much more shy and wild than it formerly was, the result he conceives of "increased hereditary fear of man." This is certainly a result in conformity with the difference observed between birds in general in peopled and unpeopled countries, the former being shy from the youngest period of life, while the latter are tame and unsuspicious at all periods, until they become acquainted with the destructive propensities of man.

Mr. Knight adds a few more cases, which he describes as but a sample of a vast number equally remarkable. We can only afford room for one, relating to a young dog of the variety called retrievers. He obtained a puppy of this breed, a month old, from a distant county, and said to be descended of a very well-bred family. "I had walked," he says, "up the side of the river which passes by my house in search of wild-ducks, when the dog above mentioned followed me unobserved, and contrary to my wishes, for it was too young for service, not being then quite ten months old. It had not received any other instruction than that of being taught to bring any floating body off a pond, and I do not think that it had ever done this more than three or four times. It walked very quietly behind my gamekeeper upon the opposite side of the river, and it looked on with apparent indifference while I killed a couple of mallards and a widgeon; but it leaped into the river on the gamekeeper pointing out the birds to it, and it brought them on shore, and to the feet of the gamekeeper, just as well as the best-instructed old dog could have done. I subsequently shot a snipe, which fell into the middle of a large nearly stagnant pool of water, which was partially frozen over. I called the dog from the other side of the water, and caused it to see the snipe, which could not be done without difficulty; but, as soon as it saw it, it swam to it, brought it to me, laid it down at my feet, and again swam through the river to my gamekeeper. I never saw a dog of its age acquit itself so well, yet it was most certainly wholly untaught."

To conclude with dogs. A gentleman of our acquaintance, and of scientific acquirements, obtained some years ago a pup which had been produced in London by a female of the celebrated St. Bernard's breed. The young animal was brought to Scotland, where it was never observed to give any particular tokens of a power of tracking footsteps until winter,

when the ground became covered with snow. It *then* showed the most active inclination to follow footsteps; and so great was its power of doing so under these circumstances, that, when its master had crossed a field in the most curvilinear way, and caused other persons to cross his path in all directions, it nevertheless followed his course with the greatest precision. Here was a perfect revival of the habit of its Alpine fathers, with a degree of speciality as to external conditions, at which, it seems to us, we can not sufficiently wonder.

The principle of what may be called a transmission of domesticated habits, is to be observed in other animals. "English sheep, probably from the richness of the pastures of that country, feed very much together; while Scotch sheep are obliged to extend and scatter themselves over their hills for the better discovery of food. Yet the English sheep, on being transferred to Scotland, keep their old habit of feeding in a mass, though so little adapted to their new country; so do their descendants; and the English sheep is not thoroughly naturalized into the necessities of his place till the third generation. The same thing may be observed as to the nature of his food that is observed in his mode of seeking it. When turnips were first introduced from England into Scotland, it was only the third generation which heartily adopted this diet, the first having been starved into an acquiescence in it." The Norwegian pony is accustomed in his own country to obey the voice of his master, rather than the bridle: accordingly, when English-born progeny of this animal is taken in hand by a breaker, unusual difficulty is found in what is called *giving it a mouth*, although it is singularly docile and obedient. In Norway, the pony is accustomed to traverse uninclosed and almost pathless wilds: accordingly, the English-born progeny has no idea of such a thing as enclosures, and will be seen brushing through a hedge with the greatest coolness, as if no such thing were in its way. The progeny of an American horse, introduced into England, ambles as American horses generally do, a kind of walk to which the English horse can only be trained with difficulty; and the same thing is observed as to the habit which the Irish horses have of leaping with their whole four feet off the ground at once, a movement occasioned by the numerous bogs which come in the way of an Irish horseman. This is a mode of leaping to which it would be as difficult to train an English foal, as it would be to prevent an Irish one from adopting it.

We thus see that not only does what metaphysicians call the *law of habit* exercise a sway in the intellects of animals, but that modifications which takes place in human communities, and passes under the comprehensive name of civilization, also affects the lower tribes of creation. A race of animals, like a race of men, is civilizable; and we can not doubt that the same softening influences which have produced the advanced nations of Europe, have operated upon the animals existing in the same countries, and made them very different from what they were in early times. It can not escape remark, that the whole principle of civilization acquires strength from having its

basis thus widened. We become the more confident in the improbability of our own species, when we find that even the lower animals are capable of being improved through a succession of generations, by the constant presence of a meliorating agency.

PRESSURE OF THE ATMOSPHERE.

THE weight of the atmosphere is nearly 15 lbs. over every square inch, so that if we could entirely squeeze out the air between our two hands, they would cling together with a force equal to the pressure of double this weight, because the air would press upon both hands; and if we could contrive to suck or squeeze out the air between one hand and the wall, the hand would stick fast to the wall, being pressed on it with the weight of above two hundred pounds, nearly fifteen pounds on every square inch of the hand! Now, by a late most curious discovery of Sir Everard Home, the distinguished anatomist, it is found that this is the very process by which flies and other insects of a similar description are enabled to walk up perpendicular surfaces, however smooth, as the sides of walls and panes of glass in windows; and to walk as easily along the ceiling of a room with their bodies downward and their feet overhead. Their feet, when examined by a microscope, are found to have flat skins or flaps, like the feet of web-footed animals, as ducks or geese; and they have, by means of strong folds, the power of drawing the flap close down upon the glass or wall the fly walks on, and thus squeezing out the air completely, so as to make a vacuum between the foot and the glass or wall.—The consequence of this is, that the air presses the foot on the wall with a very considerable force compared to the weight of the fly; for if its feet are to its body in the same proportion as ours are to our bodies, since we could support by a single hand on the ceiling of the room (provided it made a vacuum) more than our whole weight, nearly a weight of over two hundred pounds, the fly can easily move on four feet, in the same manner by help of the vacuum made under its feet. And it has likewise been found that some of the larger sea animals are, by the same construction, enabled to climb the perpendicular and smooth surfaces of the ice hills among which they live. Some kind of lizards have the same power of climbing and of creeping with their bodies downward along the ceiling of the room, and the means by which they are enabled to do so are the same. And in the large feet of those animals the contrivance is easily observed, of the toes and muscles, by which the skin of the foot is pinned down, and the air excluded in the act of walking or climbing, but it is the very same, only upon a larger scale, with the mechanism of a fly's or a butterfly's foot; and both operations, the climbing of the seahorse on the ice, and the creeping of a fly on the window or the ceiling, are performed exactly by the same power, the weight of the atmosphere, which causes the quicksilver to stand in the weather glass, the wind to whistle through a keyhole, and the piston to descend in an old steam-engine.



Storm of Thunder and Rain.

THUNDER-STORMS.

As we are often visited by these storms, which are usually of great severity, and seldom pass over without some damage to life and property, the following facts relating to them, will be read with interest by those who have never before had them, and will serve to refresh the memories of those who studied these principles in their philosophy.

The distance of a thunder-storm and consequently the danger is not difficult to be ascertained. As light travels at the rate of about 66,420 leagues or very nearly 200,000 miles in one second of time, its effects may be considered as instantaneous within any moderate distance.—Sound on the contrary, is transmitted only at the rate of 1,142 feet in a second.

By accurately observing, therefore, the time which intervenes between the flash of lightning and the beginning of the noise of the thunder which follows it, a very accurate calculation may be made of its distance, viz: when you observe the lightning, and ten seconds elapse before you hear the thunder, you are two miles out of danger; if five seconds elapse between, one mile out of danger; but if you only distinguish one second to elapse between the lightning and thunder then you may estimate yourself only 1,142 feet from the dangerous fluid and the nearer to the light you hear the thunder within one second you may count yourself in danger. By having a knowledge of these things there is no better means of removing apprehensions.

If the thunder rumbles seven seconds, you must be aware that the electric fluid has passed through space from the atmosphere to the earth, a distance of nearly one mile and a half.

Sometimes the fluid skips from one cloud to another before it comes to the earth. There is no danger to be apprehended from the thunder, but that it operates as a warning when well calculated.

Thunder is one of the consequences resulting from lightning, and lightning appears to be occasioned by the combustion of some of the inflammable particles of the air; or, according to more recent opinions, of a condensation of aerial matter conducing to electricity, by which, in either case, a vacuum is created. The surrounding atoms which remain uninfluenced by this charge, being forced together by the whole weight of the atmosphere, greatly constrict each other; but their elastic nature causes them immediately to expand, and by this enlargement their sonorous property is acquired. A centrifugal force being thus established, it acts in all directions alike; but as the circle extends, its propulsive power becomes gradually diminished, till at last its pressure is no longer felt, nor sound created. The rumbling noise of thunder is produced by that portion of the sonorous circle which strikes upon the earth, whence it becomes condensed, and, being intercepted in its upward course by dense masses of vapor, it is again reflected, and this alternate motion and reverberation continue, until the interruption ceases, or the original force is exhausted. Echo is also occasioned by reverberation from one cloud to another.

Abstractly speaking, there are few things, if any, in all that portion of the universe which is exposed to the eyes of man, so grand, so mighty in beauty, so magnificent in splendor, as a great thunder-storm. The feeble and impotent contention of man with man, even upon the grandest scale, is fain to borrow the cloudy war of the storm as images to give it grandeur. We hear of the thunder of the cannon, of the lightning flash of the artillery. But what is it all to the reality, when forth from the cloud bursts the deafening voice of the storm upon the ear and upon the eye blazes the blinding flash of the leaven bolt of heaven? When shall we produce lights like that, casting their splendor from one verge of heaven to the other? where shall we find sounds so magnificent, so grand, rolling along the whole vault from the zenith to the horizon! Yet there are few persons who view a thunder-storm with the same feelings; and, indeed, the difference of human character are tried by scarcely anything more finely than by the sensations produced upon the mind by that phenomenon. There are many who are terrified, and that terror may proceed from a thousand other causes than mere mental weakness. There are some who have been taught fear irremediably in their youth. There are some actually afraid of corporeal danger. There are some scarcely afraid, but awe-struck and overpowered. There are others, again, who have neither fear nor awe, nor admiration, the dull fabric of whose minds is incapable of any fine sensation. There are some who do more, and admire the storm, but admire it simply for its grandeur; there are others who do so likewise, but go far beyond; who combine it with visions of bright things, who hear tongues like those of angels in the voice of the thunder, and who gaze upon the blaze of the lightning, lighted by its splendor to far fain visions of Almighty power and majesty.

RAIN.—The planets move in their orbits according to fixed laws. We expect the return of spring, summer, autumn, and winter, at regular periods; and we know something of the causes by which they are produced. In a word, many of the phenomena of nature occur at fixed periods, and are produced by causes which are known. This, however, is not true of the *rain* by which the earth is fertilized, and which is so essential, not only to the comfort, but to the existence of animal life. The justice of God never visited the earth with a more terrible scourge, than *famine*. How unspeakably important, therefore, are those refreshing showers, but for which the whole earth would be more barren and desolate, than the deserts of Arabia. Yet those showers do not descend at any fixed periods; nor are they produced by causes operating with perfect regularity. The philosopher may calculate the precise moment when the sun or the moon, or even the moons of Jupiter will be eclipsed, but when rain will refresh the parched earth he can not tell.

It seems as if the Creator had determined, that in relation to one of the greatest blessings, man should be compelled to acknowledge a superintending Providence. The same causes, so far as we know,

exist when the earth is withered by drought, as when it is covered with "pools of water." Yet their operation is suspended. Let the wisest tell, if they can, why the earth is parched at one time, or one place, while at another time or in another place it is saturated with water. Yet will any maintain, that this matter is left to blind chance? The irregularity and yet the incalculable importance of rain, seem to point to the hand of God as bestowing or withholding the blessing. "He sendeth rain on the just and on the unjust. This blessing is mentioned by Paul and Barnabas as God's *witness* against idolatrous nations, when "he suffered all nations to walk in their own ways." "Nevertheless, he left not himself without witness, in that he did good, and gave us rain from heaven, and fruitful seasons, filling our hearts with food and gladness." Acts xiv. 17.

If, therefore, we have not "the early and the latter rain," to whom shall we look? Elisha, the prophet, when it had not rained for three years and six months, prayed to God; and the rain was sent. Let us learn, therefore, to thank God when the rain refreshes the earth, and humble ourselves before him and pray, when it is withheld.

How frequently we hear men complain of too much, as well as too little rain—never seeming to remember that they are murmuring against God. When will men learn to see and acknowledge the hand of a benevolent and merciful God in their common and yet most important blessing?

THE WEALTH OF THE ANCIENTS.

WE find in antiquity some instances of splendid wealth. While writing magnificent treatises upon contempt for riches, Seneca had contrived to accumulate a little fortune of 85,000,000 francs. An astrologer, named Lentulus, was content with 56,000,000 francs. When Tiberius died, 640,000,000 francs were found in his coffers, not a franc less. In less than a year good Caligula spent the whole of it; there remained not an *as*, not a *quadrans*. The debts of Milo amounted to 120,000,000 francs. Cesar had not 49,000,000 francs but 49,000,000 creditors before he obtained any public office; the poor fellow was soon enabled to present Curio with 12,000,000 francs, and Lucius Paulus with 7,500,000, in order to detach them from the party opposed to him; he one day begged Servilis, the mother of Brutus, to accept a trifle in the shape of a pearl worth 550,000 francs. Mark Antony's house was sold to Mesalla for the sum of 10,000,000. A fire destroyed Scaurus's villa; the loss was reckoned at 22,000,000 francs. When Lucullus supped with Lucullus, the cost of that *sans ceremonie* meal amounted to between 40,000 and 100,000 francs; and after the death of that refined consul, the fishes that swam in the pond of his country-house, were sold for the trifle of 700,000 francs. Otho spent 26,000,000 on the finishing of the wing of a palace commenced by Nero. One of Caligula's dinners cost 1,800,000 francs. Heliogabalus was more parsimonious; one of his breakfasts

only required 500,000 francs. *Æsopus* swallowed a pearl worth 200,000 francs—a gastronomic example also set by *Cleopatra*. The *Æsopus* we advert to, (his son by-the-by, melted precious stones to drink at his entertainments!) was not, as you may well suppose, the jolly fabulist and Greek hunchback whom everybody is acquainted with; it was *Claudius Æsopus*, an actor on the Roman stage, very intimate with *Cicero*: this opulent historian earned in one day more than eight hundred Stoic, Pythagoric, or Peripatetician philosophers could pocket in a year. *Apicius*, the most celebrated *gourmet* of the “eternal city,” devoured (we use the proper word) 14,000,000 francs; he then examined his financial situation, when the poor creature found that all that remained was 1,950,000 francs; foreseeing that he must die of hunger, he committed suicide. *Crassus*, when he went to fight the Parthians, and be killed by them, was the possessor of landed estates, worth 40,000,000 francs; his slaves, furniture, and trinkets, were, fortunately, of a little more value.

All the riches in the world, were, at that period, in a few hands. You must remember, ye classic readers, the feast of *Trimalcion*—that awful old man, so full of contempt for mankind—who asked what a poor man was (*quid est pauper*), who received from one of his stewards 10,000,000 sesteres which he could not lay out, and who wished the likeness of his pet dog to be engraved on his tomb.

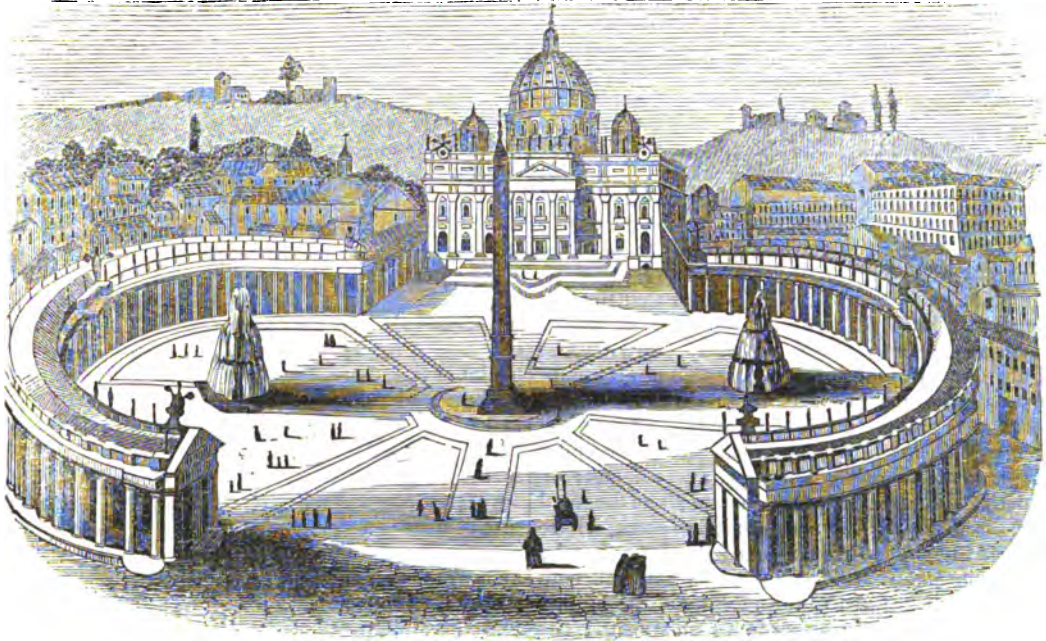
If some Roman of the imperial times could rise from his tomb—if he visited us, how astonished he would be, and what compassion we should excite in him! He would find our *elegans* assuming their surnames, and deriving their vanity from a pair of gloves of a light color, which may cost three francs; most of our *lions* have nothing more than names in the way of capital; scarcely can they contrive to owe their bootmakers or tailors a bill of two or three figures; and if they have to subscribe a wretched bill of exchange, the first usurer they have to deal with puts them in durance. To dine at a hundred francs a head is the *ne plus ultra* of their magnificence. They must, indeed, be ashamed to think of *Lucullus's* feast and *Milo's* debts!

If one of the said Romans wished to witness the entertainments of our circus, “I remember,” would he say, “the horseraces to the number of a hundred a day which *Domitianus* established; my father saw divine *Nero* himself conduct a car with ten horses; he saw him arrive the last, yet win the prize. *Claudius* ran camels against horses. *Trajan* drove in a carriage drawn by two sea-horses. *Heliogabalus* was drawn by stags, lions, tigers, and elephants; it was he who imagined a race of cars conducted by drivers who were to be at least eighty years old. *Commodus* led, four in-hand, wild boars, bears, and buffaloes. *Trajan* entertained his people with games which lasted a hundred and twenty-three days; ten thousand gladiators appeared and died in them; that amused us for a moment. *Caligula* made sixteen hundred men fight at the same time. Many a time the Field of Mars was converted into a sea covered with galleys. Thirty-six crocodiles were seen on it one day. *Titus* had nine thousand wild animals killed in

one day. In a single evening, *Heliogabalus* exhibited fifty-one tigers. *Probus* threw promiscuously on the arena a thousand ostriches, a thousand stags, and as many wild boars. Rome witnessed combats between cranes and cranes, and between sea-calves and bears. An emperor introduced one day, into the circus, ten thousand rats and a thousand weasels. *Marcus Aurelius* would have a hundred lions make their appearance at the same time. Another emperor constructed a whale of wood which contained fifty panthers. A third invited us to see serpents fifty cubits long. These *fetes* were most frequent; it mattered not whether the ground was soaked with the blood of a thousand animals, or that of a thousand slaves.”

When the said Roman had finished his speech, you might take him to the opera, or any other theatre. Instead of *Asonias's* sun, he would have our dismal lamps; instead of his immense galleries and gigantic marble columns, he would be thrust into a most inconvenient box in a building of wood, pasteboard, or brick, decked with gilt paper. He would then be condemned to listen to music almost always very bad. He would witness tragedies which would make him laugh, and comedies which would make him weep. He would make his escape without hearing verses roared or squeaked, which *Bavius* and *Meevius* would not have condescended to subscribe their names to. Accustomed to the villas of Campania, to the landscapes of Tibur, he would be petrified on seeing what we call country-houses—those wretched buildings, so small, so uncomfortable, surrounded with *cabarets*, horrible huts, and manufactures which contaminate the air and corrupt the waters. Quite at liberty in his own time, to crucify a slave who had uttered a word in the slightest degree offensive to him, the said Roman could not comprehend that he has no longer a right to vouchsafe life and award death at his home, and nothing could determine him to remain in so shabby a society as that of the moderns.

WHO ARE THE GREAT?—It is not improbable that the noblest human beings are to be found in the least favorable conditions of society, among those whose names are never uttered beyond the narrow circle in which they toil and suffer, who have “but mites” to give away, who perhaps have not even that, but who “desire to be fed with the crumbs which fall from the rich man's table;” for in this class may be found those who have withstood the severest temptation, who have practised the most arduous duties, who have confided in God under the heaviest trials, who have been most wronged and have forgiven most; and those are the great, the exalted. It matters nothing what the particular duties are to which the individual is called—how minute or obscure in their outward form. Greatness, in God's sight, lies, not in the extent of the sphere that is filled, or the effect which is produced, but altogether in the power of virtue in the soul, in the energy with which God's will is chosen, with which trial is borne, and goodness is loved and pursued.—*Channing*.



Front View of St. Peter's at Rome.

THE CATHEDRAL CHURCHES OF ST. PETER'S AT ROME, AND ST. PAUL'S IN LONDON.

—

NOTHING more is necessary to prove the existence of a divine government of the world than the circumstance of its universal acknowledgment in every age. No matter how civilized or refined, or how uncultivated and rude a people may be, we uniformly find the chiefest of their architectural structures devoted to the service of that Being, whom, as their God, they reverence and adore. Whether we look at the rude, yet remarkable remains of Stonehenge, or imagine the splendors of that temple which merely by its destruction has brought down the name of its destroyer to present posterity, or the surpassing magnificence of that "holy and beautiful house," which the HOLIEST OF HOLIES delighted to honor with his presence, we find the same principle pervading their founders and their occupants, and are constrained to exclaim, "truly there is a God that reigneth in the earth."

Need we wonder, then, that if this principle has been so wonderfully evident in the uncultivated sons of nature, it should be rife and perceptible where the revelation of the true faith, and the enlightenment of civilization, have conjoined to consolidate the principles and elevate the thoughts.

Such, most assuredly, has been the case, and the names of St. Peter's, at Rome, and St. Paul's, in London, at once excite ideas commensurate with the grandeur of the subject. They are, perhaps, of all

edifices at present the most remarkable. The one seated in the midst of the sepulchres of departed greatness, is the representative of all the astounding and oppressive superstition by which the world at large has been enslaved. The other, rearing its lofty head amid the busy resorts of successful traffic, in the very heart of commerce, looks around on the innumerable dwellings which constitute the capital of a free, a great, and a glorious people, who derive their greatness and enjoy the security of their possessions truly in consequence of the purity of their faith and of their honored position as head of that band who protest against any admixture of man's tradition with the perfectness of Divine revelation. They are well chosen, to be placed in juxta-position. The styles of their architecture, the nature of the scenes by which they are surrounded, and the dignity of the persons to whose care officially they are confided, have rendered them objects of interest as common as it is intense. Both are models of grandeur of design, and both exhibit the utmost skill of the architects of whose professional life they are the first glory, and they are equally worthy of admiration, whether as objects of beauty or of scientific execution; a comparison of their respective appearances and proportions can not therefore but be pleasing as well as profitable. The principal difference between them is that of size, St. Peter's being the larger building, while, we believe, St. Paul's is allowed to be the more graceful in its proportions, and most chaste in its embellishments. But, looking at either, the mind can not but be filled with the colossal

magnitude of the design, the richness of the tracery, and the beautiful fitness of parts by which they are distinguished. The spirit rushes forth as the eye surveys the amplitude of space through which the visual organs range, and feels that awe-impressing impulse which brings it into a frame to enjoy and to partake of the solemn magnificence of the place. Nor is the sensation diminished or destroyed by the fictitious accessories which have been brought in to add a new power to the influence of the holy pile. Around the whole of the interior of that erection, which, now the glory of modern Rome, has become the throning palace of an empire almost as extensive as that over which the Seven-hilled Mistress of the ancient world held an almost unrestricted sway, all the appliances of art, in all the colors that tint the sky, and displayed in the representation of scenes that can absorb the soul, are profusely strewn. And well are they so; for if her present empire be only almost as extensive, how much more may we say of it—that it is imperative and complete. Then she held men's *bodies* in bondage, and ruled only over their political liberties; but now, every faculty of the soul is laid prostrate at her dictate; and the mind—yea, the naturally free and illimitable spirit, whose boundless imaginings are circumscribed neither by earth nor heaven—which, while it is stamped with the image, partakes also of the eternity of the mighty and HOLY GOD who breathed into man's nostrils the breath of life, bends in abject submission at her footstool. Who can say, then, how wide her rule—how surpassing her command?

Possessing the advantage of an atmosphere of such pure clearness that distance appears to be annihilated to the eye, St. Peter's is an object of unimaginable attraction to the traveller on every side as he approaches Rome. Rising high into the lucid air, it is without a single object to reduce the splendor of its effect; and so universal are the feelings of enthusiastic admiration which excite every person who has any pretensions to taste on his first view of this sublime edifice, that we know not a single individual, not a professional man, who has ever stopped to observe the breaches of architectural rule, by which it is undoubtedly blemished—nay, even the critic himself has been compelled to forget his spleen, descend from the elevation of his judgment-seat, and join with the general mass in expressing respect for the architect, and in uttering wonder at his work.

Nor is the near approach to this noble temple less impressive. The artist and his employer found a site possessing numberless advantages, and they used a judicious liberality in making the most of them. No unsightly object intervenes to obstruct the aspect of the front—no narrow approach deteriorates the effect of the mighty façade. A wide and sufficient area lies before the western entrance, enclosed on either side by a semi-circular crescent colonnade of simple Doric, and of most chaste design. An obelisk occupies the centre of the area, of sufficient size and elevation to be in itself an object worthy of notice, and yet not so large as to be any other than an appendage to, and a preparation for, the building to which it is attached. On either side

of the obelisk, almost at equal distances between it and the colonnade, is a fountain continually jetting forth its pure and sparkling waters, giving a cheerfulness to the scene by the vivacity of their play, and diffusing a coolness all around. Within a few yards of the front, the crescent columns are continued in an avenue, at right angles with its termination and the church, and up to the very walls of the latter. The front is itself sufficiently imposing from its magnitude and height; but it is the interior and cupola, together with its tremendous extent, which render St. Peter's one of the greatest wonders of the world. Compared with the interior, the front is mean.

The cathedral does not stand within the limits of ancient Rome, but on the hill of Janiculum, or rather, we should say, on the Vatican hill, which is a continuation of the Janiculum—the only hill on the north banks of the Tiber, the other six being on the south or left bank. It was on this hill—where Rome looked proudly on her wide domain, and her laurelled emperors despatched their proconsuls and governors to every quarter of the earth, to reign with almost sovereign power, and with much more splendor than that of many a king—that the triumphs of conquerors, and the processions of the glorious, were marshalled and arranged. At a later period, it was covered with palaces, temples, and places of public amusement; and here, in the circus of Caligula or Nero, the early martyrs of the Christian church fought with wild beasts in those barbarous games and combats which are the disgrace of the Roman name, confirming with their blood, through that horrible and cruel death, the covenant of truth and fealty, into which they had entered with that glorified Redeemer who had paid with the penalty of his life and inexpressible sufferings the ransom for their eternal welfare. Here also, it is believed, was the scene of St. Peter's crucifixion, and on this spot did Constantine first erect a Christian church, literally, and, in fact, fulfilling the aphorism, that the blood of the martyrs is the seed of the church. This church was of considerable extent, being 300 feet long and more than 150 feet wide, and though boasting no architectural beauty, was so strongly built that it endured for more than twelve centuries. At length its dilapidated state, notwithstanding the constant repairs of several popes, becoming extreme, Julius II., a man of much ability and of great intellectual energy, determined to build another structure worthy of its object—of being what he considered the chief cathedral of the Christian world, and which should cover the site occupied by the church of Constantine. He fixed on Bramante Lazzari as the architect, and adopted his plan of erecting it in the form of a Greek cross.

Near this site stood the Pantheon, an ancient temple of Pagan Rome, of beautiful design, and crowned by a cupola of exquisite proportions. This, Bramante was very desirous of incorporating in his own plan, but what appeared to him an insuperable obstacle presented itself. The cupola of the Pantheon was erected upon pillars, and, consequently, could not be adopted, as its height was too insignificant to surmount the roof of the new edifice. Shortly after



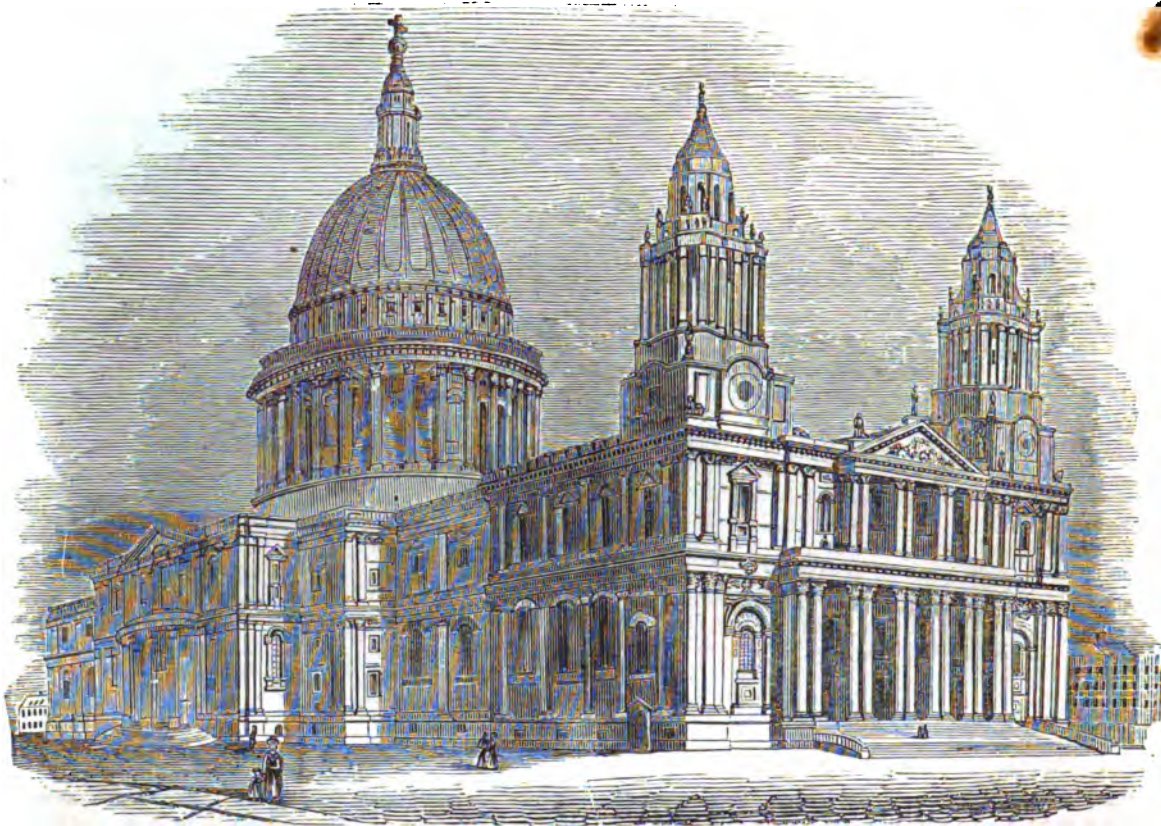
View of St. Peter's from the East, above the Bridge of Michael Angelo.

this, however, Bramante died, and Michael Angelo Buonarroti, a man who has left an imperishable name in the several arts of architecture, painting, and sculpture, and whose genius was as sublime as it was daring and successful, was chosen to succeed him. Angelo at once perceived the beauty of Bramante's first conception of the cupola, and, with the ebullition of a mind proportioned to the work he had undertaken, exclaimed, while alluding to the Pantheon, "A similar cupola will I raise in the air," and well has he performed his promise. 'There it is, rising with unrivalled majesty to the height of nearly five hundred feet in the bright blue sky of Italy, one fourth higher than our own St. Paul's, and unmatched in extent and grandeur by any similar creation of modern art.

Upon this work Michael Angelo spent eighteen of the best years of his life; yet—for one life was too short to complete so vast an undertaking, especially with the appliances for labor then possessed—the architect died, leaving it unfinished. The same powers were not possessed by any of his followers. He had judiciously taken the plan of Bramante so far as the Greek cross was concerned, but those who succeeded him evinced less of judgment and good taste—perhaps, in justice to their professioned reputation, we ought to say, less of independence, for the form of the Greek cross was exchanged for that of the Latin cross, a lengthy and unequal figure, in order that the whole of the site which had been occupied by the church of Constantine

should be comprised within the range of the new building. To this circumstance the best judges mainly attribute its defects, which, notwithstanding its grandeur, are considerable.

The first stone was laid in 1506, by Julius II., and the temple was finished in 1622, during the pontificate of Paul V., the seventeenth pope after Julius. During this long period of 115 years, every exertion was made by the several spiritual sovereigns of Christendom to expedite the work, and it required all their power, and the expenditure of no less a sum than eight millions of money, equivalent in value to nearly one hundred and sixty millions in our day, to complete it within that time. Even then the temple alone was finished. Not less than 150 years more were required to finish the accessories, at an additional expense of nearly two millions, equivalent almost to twenty or five-and-twenty millions of the present day. The work was at length completed in 1784, having occupied a period in its construction of not less than 278 years—no small portion of the Christian era;—and it is said, that at the present time it does not cost the Papal see less than 6,000*l.* a year to keep it in repair. The clear inside length of the church is six hundred and fifteen feet; the breadth of the transepts four hundred and forty-eight feet. The extreme height, from the level before the piazza to the summit of the cross which surmounts the building, is four hundred and sixty-four feet. The distance from the extreme line of the ellipsis of the colonnades to the portals of the church, is nine hun-



St. Paul's Cathedral, London.

dred feet, which, added to the outside length of the church, gives the monstrous extent of not less than six hundred yards occupied by the cathedral and its appendages.

The cupola is covered externally with lead; but its masonry, as well as that of the church and its adjuncts, is of Travertine stone. The immense quantity of stone used in its construction is almost inconceivable; that perceptible to the eye is enormous, but that below the ground, occupied in the foundations and substructions, which are of enormous thickness, is much more.

In juxtaposition with this account of the erection of St. Peter's, we can not do better than give a sketch of that of St. Paul's up to the same period—that is, the completion of the building—reserving for a subsequent portion of this article a more strict comparison between the two erections as they now stand.

From a very early period of the history of England, the site of the present cathedral has been occupied by a church devoted to Christian worship; indeed, prior to the existence of the first church, and for a long time preceding, an edifice erected for the purposes of religious service had stood there. It appears to be uncertain whether the building which was first adapted as a Christian church was erected with that view, or whether it was a pagan or druidical temple,

converted from a scene of deluding and degrading superstition into an oracle of truth. Certain, however, it appears to be, that at least two edifices existed there prior to the one which was destroyed by the great fire that devastated London in the year 1666. That erection was greater both in extent and height than the present building, and is described as a noble Gothic structure, nearly six hundred feet in length, and nearly five hundred high. For some time it was thought that it might be preserved and sufficiently renovated, by extensive repairs to last for some ages longer, but, upon a careful survey of the ruins, it was decided that the expense would be very great to bring it into stable condition, and as the result of any such endeavor at the best was but dubious, it was conceived that the more advisable plan would be to take down the old building and erect another in its place. A number of monuments were preserved from the conflagration, some of which were ground down to form cement, but the rest were kept, and are now deposited in the crypt under the cathedral.

Happily, a man was met with, as indeed is generally the case in times of public calamity, every way calculated for executing the work in a manner that would render it an imperishable monument of his own genius, while it proved at the same time

every way worthy of the great people whose chief ecclesiastical edifice it was destined to become. To him it is greatly owing that, after the disastrous calamity which had befallen the city, a system was adopted which caused it to rise from its ashes with renewed beauty, and added convenience. The streets were built wider, and laid out on a better plan than that which existed previous to the fire, and other principles adopted, by which not only the city was improved, but which conduced very considerably both to the happiness and comfort of its inhabitants.

Christopher Wren was a man who had risen by the mere force of his abilities and the power of his mind to an eminent rank in his profession as an architect, and to his care the erection of several of the principal city churches was confided, especially those which are now confessed to be two of its greatest ornaments, the church of St. Stephen, Walbrook, and St. Bride's, Fleet street. Wren at first submitted a model, which was in accordance with the natural conceptions of his genius. This comprised an elevation of only one story, instead of two, as the cathedral is now built, and contained a façade of great nobility and grandeur; but a paltry objection was taken to it, at the instance, it is said, of the Duke of York, afterward James II., that stones could not be found large enough to form the pillars. The real inducement of the royal objector is stated to have been a little-minded jealousy that the Protestant church should excel the Papist cathedral of St. Peter's at Rome, the creed of which see he held. Whether this be true or not, it is certain that Wren was deeply grieved at the rejection of his design, and is said even to have shed tears at the loss of so great an opportunity of immortalizing his name. His next object was to submit such an elevation and plan as should not interfere with the prejudices of his opponents, and yet do some justice to himself. The result was the delineation of the building as it now stands.

It is situated on an eminence rising from Fleet-street and from the banks of the Thames, and is the cathedral of the see of London, though as a deanery attached to the bishopric of Llandaff. A dwarf wall, upon which is placed a massive iron balustrade, surmounts the extensive space on which this splendid temple stands. This circumscribes the whole of the erection, having in front a large space, in which a statue of Queen Anne, the sovereign under whose auspices the building was completed, has been erected. A magnificent flight of twenty-two steps leads up to the entrance in the west façade. This is composed of a double range of columns, the lower one consisting of a tier of twelve pillars of the Corinthian order, of lofty proportions, upon which rests a broad and effective architrave; the upper one consists of eight composite columns, placed in peristyle, surmounted by a most beautifully proportioned pediment, on the tympanum of which is sculptured in both relief the representation of the conversion of St. Paul. Over the several points of the front, as well as round the whole of the erection, are placed figures of the apostles. The portico at the northern entrance consists of a semi-cupola, which is supported

by six Corinthian columns, and reached by an ascent of twelve semicircular steps of black marble. On the southern side there is a portico of a similar kind, but there are to that side twenty-five steps instead of twelve, the ground being much lower there.

The cathedral itself, though, like St. Peter's, in the Grecian style of architecture, is yet in the Gothic form of a cross, and round the whole of the exterior the system is observed of dividing into two stories; the external walls being finished by a well-proportioned balustrade. From the centre of the cross rises a magnificent cupola, lower in height than that of its rival in Italy, but infinitely surpassing it in grace of design and fitness of proportion, and certainly lofty enough to raise the soul to the mightiest of its aspirations, and to render it a place where, filled with its magnitude and vastness, man feels himself but a pigmy in the erections of his own hands. On the corners of the west front are placed two campaniles, or bell towers, consisting of eight peristyle Corinthian columns, each tower being crowned by a beautiful little dome.

The length of the structure, including the portico, is 514 feet, its breadth at the transept 286, the height from the pavement before the west front to the top of the cross is 404 feet, being about sixty less than the height of St. Peter's. The exterior diameter of the cupola is 145 feet, and the entire circumference of the building comprises as much as 2,292 feet. Thus in all its extent it is considerably less than the church at Rome, but it is questionable whether it is not on that very account brought more within the compass of the physical senses, and thus absolutely made to appear larger. Yet, though less in size than the colossal structure with which we have put it in contrast, its extent is yet sufficient to place it almost first among the buildings of the earth, and it is therefore well worthy of notice for the rank it thus holds, but yet more will it win upon the feelings by the exceeding grace and splendid combination of its parts. Less in height than St. Peter's, its western front, especially, is altogether devoid of those manifold defects which deface and take off from the effect of the grand façade of its rival; and if it suffer in comparison of its size, it will infinitely gain in the exceeding elegance by which it is everywhere marked. This, indeed, is its peculiarly distinguishing, as it is its prevalent characteristic.

The cathedral of St. Paul was erected at the national expense, and cost the comparatively trifling sum of 1,500,000*l.*, a sum altogether inadequate apparently to the work. This would, perhaps, be equivalent to nearly 10,000,000*l.* of our present value. This, however, is a trifle as compared with the cost of St. Peter's; and what could possible occasion so great a disparity as that which appears between the sums expended upon the two churches, we are utterly at a loss to decide; but, to say the least of it, credit must redound greatly to the architect and all employed in the construction of our own great national work, for the economy with which it was managed.

The iron balustrade on the wall surrounding the church, with its seven gates, weighs about 201 tons, and was erected at the expense of 11,202*l.*

But if the British may take credit to themselves on the score of expense, no less ought those principally engaged in the erection of St. Paul's to be praised for the expedition with which this great work was completed. The first stone was laid on the 21st of June, 1675, and the last stone of the lantern placed by Mr. Christopher Wren, the son of the architect, in 1710, just thirty-five years after the building was commenced.

The church of St. Peter's at Rome required a period of not less than 115 years, and was in process during the reigns of eighteen popes, and scarcely less than twenty architects. The appendages of that mighty edifice required full 163 years more, thus making together 278 years occupied in the erection, while the church of St. Paul, commenced after a period when civil war had desolated the land and put an almost entire stop to trade and commerce, and a period too, which was speedily followed by two of the most severe visitations by which a nation was ever afflicted; for shortly after the accession of Charles II., a plague raged throughout the metropolis, more extensive in its ravages and more dreadful in its character than any disease on record; and scarcely was the distemper subdued, when fire came with its scorching rage, to cleanse the land from the leprosy of its stain, and nearly half the metropolis fell a prey to the devouring flames. Yet notwithstanding all these misfortunes, scarcely were the ruins cleared away, ere we find the foundations laid of a temple, the magnificence of which is without a parallel in the land of beauty and of wealth, and which has no superior on the earth. One builder, Mr. Strong, superintended its erection; one bishop, Dr. Henry Compton, filled the see during the work; and one architect was blessed with the eminent privilege of planning and accomplishing its completion. Truly and right nobly was it written on his gravestone, for the information of those who read, that Sir Christopher Wren was there interred, and who inquired for his monument,

"Lector,—
Si requiris monumentum—circumspice."

Such, at the entrance of the choir, the most elaborate, and beneath the amplitude of the lofty dome, the most sublime, of his works, was written the glorious epitaph that points to and speaks of his genius.

We may, perhaps, be accused of an overweening national pride, of an undue and assuming vanity, in thus speaking of the British cathedral, and if necessary we are ready to plead guilty to the charge, should it be established. But we believe it can not be; and we would rather incur the risk of having imputed to us, too warm an admiration of the products of British genius, than be responsible for that coldness which is ever partaking of an envious spirit, and which is never satisfied except when discovering the defects of other men's works; or for that maudlin effeminacy which requires a show of spurious liberality when estimating the achievements of foreigners, and comparing them with those our own countrymen. To deny to any the credit which they

have honestly earned, is alike despicable and unjust, and we deem that we are only doing bare justice to Sir Christopher Wren, and his able compeers and coadjutors, in awarding to him the credit of having erected the most magnificent temple, at comparatively the smallest cost and within the shortest time, of any of similar magnitude that was ever built. This is the more due, that St. Paul's does not possess those advantages of climate and position, which are necessary to give an edifice of its size and character full effect. It has in many ways drawbacks on its beauty,—but notwithstanding all these disadvantages, it possesses a grandeur and sublimity equal to the desires and conceptions of the most fastidious critic.

ANCIENT MECHANICS.

TRADITION has scarcely preserved a single anecdote or circumstance relating to those meritorious men, with whom any of the useful arts originated, and when in process of time, history took a stand, in the temple of science, her professors deemed it beneath her dignity to record the actions and lives of men, who were merely inventors of machines, or improvers of the useful arts; thus nearly all knowledge of those to whom the world is under the highest obligations, has perished for ever.

The scholar mourns and the antiquary weeps over the wreck of ancient learning and art—the philosopher regrets that sufficient of both has not been preserved to elucidate several interesting discoveries, which history has mentioned; nor to prove that those principles of science, upon which the action of some old machines depended, were understood; and the mechanic inquires in vain for the process by which his predecessors, in remote ages, worked the hardest granite without iron, transported it in masses that astound us, and used them in the erection of stupendous buildings, apparently with the facility that modern workmen lay bricks, or raise the lintels of doors. The machines by which they were elevated are as unknown as the individuals who directed their movements. We are almost as ignorant of their modes of working the metals, of the alloys which rivalled steel in hardness, of their furnaces, crucibles, and moulds, the details of forming the ennobling statue, or the more useful skilnet or caldron. Did the ancients laminate between rollers, and draw wire through plates, as we do? or was it extended by hammers, as some specimens of both seem to show? On these and a thousand other subjects, much uncertainty prevails. Unfortunately, learned men of old deemed it a part of wisdom to conceal from the vulgar all discoveries in science. With this view, they wrapped them in mystical figures that the people might not apprehend them. The custom at once became so general, that philosophers refused to leave anything in writing explanatory of their researches.



Camels.

THE CAMEL.

THE country most rich and abundant in camels is undoubtedly the province of Nejed in Arabia, entitled on that account *Om el Bel*, or Mother of Camels. It furnishes Syria, Hedjaz, and Yemen, with camels, which in those countries become worth double the price originally paid for them in Nejed. The Turks and Kourds of Anatolia purchase yearly from 8,000 to 10,000 camels in the Syrian deserts, of which the greater number are brought there from Nejed. But it is the camel of Oman which is celebrated in the songs of Arabia, as the fleetest and most beautiful; and, in fact, the legs of the Oman camels are more slender and straight, their eyes more prominent and sparkling, and their whole appearance denotes them of higher lineage than the ordinary breeds of this animal. In mountainous countries camels are scarce certainly: but it is a mistaken impression that camels are not capable of ascending hills; for, provided they are rough, they can ascend the steepest and most rugged paths with as much facility as mules. The feet are large and spreading, and covered at the lower part with a rough flexible skin. It is an erroneous opinion that the camel delights in sandy ground. It is true that he crosses it with less difficulty than any other animal: but wherever the sands are deep, the weight of himself and his load makes his feet sink into the sand at every step, and he groans and often sinks under his burden. Hence the skeletons of camels are found in the greatest numbers where the sands are the deepest. The soil best adapted to their

feet, and which they traverse with the most facility, is that of which the desert is usually composed, a dry and hard but fine gravelly plain.

In years of scarcity the camel is always barren. If the birth of a camel, as is often the case, happens on a journey, the Bedouin receives it in his arms, and places it for a few hours on the back of its mother. But at the first halting-place the little stranger is put down to receive the parent's caresses, and always after it continues to follow her footsteps unassisted. At the beginning of the second year the young camels are weaned; in the fourth year they begin to breed.

Accustomed even from its birth to long and toilsome journeys, little training is necessary, beyond proportioning the weight to its tender age, to inure them to the carrying of burdens; and they voluntarily kneel when about to be loaded for a journey, a position which their great height renders necessary. Kneeling is their natural state of rest, but when heavily laden on flinty or stony ground, it can not be accomplished without pain. They then drop at once on both front knees, and, in order to establish room for their hinder legs, are compelled, in that condition and while encumbered with the whole weight of the burden, to plough them forward. The callosities on their joints, although nearly of a horny nature in the aged camels, seem insufficient to defend them, and it is impossible for the European to view the act without commiseration. In consequence of this the Bedouins never make them kneel to mount themselves, but either cause the animal to drop his neck to receive



A Caravan of Merchants passing the Great Desert.

their foot, and on their raising it the rider is enabled to gain his seat, or they climb up behind; it pleases them much when a stranger can accomplish either of these feats.

The distinction between the camel and the dromedary is not that the former has two humps and the latter but one, as very frequently has been stated, and very generally believed. Both have but one hump, and the dromedary is distinguished from the camel only by its higher breed and finer qualities—as the high blood race-horse is distinguished from the cart-horse. Whenever an Arab perceives in one of his camels any indication of its being small and active, he trains it for the purpose of riding; and if it be a female, he takes care to match her with a fine high-bred male, whereby the fine dromedary races are improved and perpetuated. These animals, destined exclusively for riding, are called *hedjein* in Egypt, and *deloul* in Arabia. The two-humped camel is the northern or Bactrian camel,—the camel of Central Asia,—and found, by migration with man, in the Crimea, and in the other countries which border the Caucasian mountains. In Southwestern Asia this camel is scarcely known. Stephens* assures us that on the starting of the Mecca caravan he had seen together as many as, perhaps, twenty thousand camels and dromedaries, and had not seen among them more than half a dozen with two humps. Burckhardt also says the Arabs have no dromedaries with two humps, nor did he ever see or hear of any in Syria. It is true that in Anatolia there is a two-humped breed, produced between the two-humped male dromedary brought from the Crimea and a Turkman she-camel. But one of the two small humps which the progeny exhibits is cut off immediately after birth, to render

it more fit for bearing a load. The single hump of the Arabian and Syrian camels continues round and fleshy, while the animal is in good condition; but, by a remarkable provision of nature, this excrescence by its gradual absorption supplies the place of other nourishment under circumstances of privation. Few creatures exhibit so rapid a conversion of food into fat as camels. A few days of rest and ample nourishment produce a visible augmentation of flesh; while, on the contrary, a few days employed in travelling without food, reduce the creature almost immediately to little more than a skeleton, excepting the hump, which much longer resists the effects of fatigue.

The first thing, therefore, about which an Arab is solicitous, on commencing a long journey, is the state of his camel's hump. If this is in good condition, he knows that the animal is in a state to endure much fatigue on a very moderate allowance of food, believing that, according to the Arabic saying, "the camel feeds on its own hump." The fact is, that as soon as the hump subsides, the animal begins to desist from exertion, and gradually yield to fatigue. After the creature has in this manner lost its hump, it requires three or four months of repose and copious nourishment to restore it, which, however, does not take place until long after the other parts of the body have been fully replenished with flesh. It is in these facts, which exhibit the hump as a provision of food (so to speak) for the exigencies of protracted travel across the deserts, that we discover the adaptative use of this curious, and, as might seem to the cursory observer, needless excrescence.

The great length of the camel's neck enables the animal, without stopping, to nip the thorny shrubs which everywhere abound on the desert, and, although the spines on some are sufficiently formidable to pierce

* "Incidents of Travel," p. 248.



A Halt.

a thick shoe, the cartilaginous formation of their mouth enables them to feed without difficulty. The Bedouin, also, when walking, devotes a considerable portion of his time in collecting and feeding his camel with the succulent plants and herbs which cross his path. These, on a journey, with a few handfuls of dates or beans, form its ordinary food; but while encamped, he is fed on the green stalk of the jowree, and the leaves and tender branches of the tamarisk, heaped on circular mats, and placed before the camel, who kneels while he is partaking of them. In Southern Arabia they are fed on salt and even fresh fish.

During a journey it is customary to halt about four o'clock, remove the loads, and permit the camels to graze around; if the Arabs are desirous of preventing them from straying too far, they tie their fore legs together, or bind the fetlock to the upper joint by a cord. The head is never secured, excepting while travelling, when the Arabs unite them in single file, by fastening the head of one to the tail of his predecessor. Toward evening they are called in for their evening meal, and placed, in a kneeling posture, round the baggage. They do not browse after dark, and seldom attempt to rise, but continue to chew the cud throughout the greater part of the night. If left to themselves, they usually plant their hind-quarters to the wind.

Authorities differ with respect to the camel's capability of enduring thirst. From the data collected by Burckhardt, it appears that the power varies much in the different races of the camel, or rather, according to the habits respecting the exercise of this faculty which have been formed or exacted by the heat or cold, the abundance or paucity of water, and the state of vegetation in the country in which they have been

brought up. Thus the camels of Anatolia, during a summer journey, require water every second day, while the camels of Arabia, can dispense with it until the fourth, or even the fifth. But then again much depends on the season. In spring, when the herbage is green and succulent, it supplies as much moisture as the animal's stomach requires; at that season, therefore, the journey across the great Syrian desert from Damascus to Bagdad (twenty-five days) may be performed without any water being required by or given to the camels; at that time of the year only, therefore, a route destitute of water can be taken. In summer the route by Palmyra is followed, in which wells of water can be found at certain distances. Burckhardt reckons that, all over Arabia, four entire days constitute the utmost extent to which the camel is capable of enduring thirst in summer. In case of absolute necessity, an Arabian camel may go five days without drinking, but the traveller must never reckon on such an extraordinary circumstance. The animal shows manifest signs of distress after three days of abstinence. The traveller last named throws much discredit on the popular story of the reserved supply of water in the camel's stomach, for the sake of which the animal is said to be often slain by his thirsty master.

Notwithstanding its patience and other admirable qualities, the camel is gifted with but little sagacity; nor does it appear to be capable of forming any strong attachment to its master, although it frequently does so to one of its own kind with which it has long been accustomed to travel. In protracted desert journeys the camel appears fully sensible that his safety consists in keeping close to the caravan, for if detained behind, he never ceases making strenuous efforts to regain it.

It is a pity to contradict the pleasing picture which Ali Bey draws of the peaceful dispositions of camels; but the truth must be told, which is, that they are among the most quarrelsome beasts in existence. After the hardest day's journey, no sooner is the baggage removed than the attention of the driver is required to keep them from fighting, as they are prone to give the most ferocious bites and to lacerate each other's ears.

The desert camels, less accustomed to walls and houses than those of Anatolia and Syria, are with difficulty led through the streets of towns when they arrive in caravans; and it being impossible to prevail upon some of the more unruly to enter the gates, it is often found necessary to unload them outside and to transport the bales into the town on asses.

There have been various estimates of the speed of the camel. A sufficient number of authorities are agreed in estimating its ordinary pace at two and a half miles an hour. Calculations made in Syria, Egypt, Arabia, and Turkistan agree in this. This is to be understood as the ordinary pace in long caravan journeys, when the animal only *walks*. The saddledomedaries are capable of other things, although it may be noted that the long journeys which it can perform in a comparatively short time, are in general effected less by positive speed than by its very extraordinary powers of sustained exertion, day after day, through a time and space which would ruin any other quadruped. For short distances, the swiftness of a camel makes no approach to that of even a common horse. A forced exertion in galloping the animal can not sustain above half an hour, and it never produces a degree of speed equal to that of the common horse.

If a camel happens to break a leg, it is immediately killed, as such a fracture is deemed incurable. The camel is laden as it kneels, and although the load is often laid on recent wounds and sores, no degree of pain or want ever induces the generous animal to refuse the load or attempt to cast it off. But it can not be forced to rise, if from hunger or excessive fatigue its strength has failed; it will not then do this, even without the load. Under such circumstances camels are abandoned to their fate. It is seldom they get on their legs again, although instances have been known where they have done so, and completed a journey of several days. Wellsted tells us he had often passed them when thus abandoned, and remarked the mournful looks with which they gazed on the receding caravan. When the Arab is upbraided with inhumanity, because he does not at once put a period to the animal's sufferings, he answers that the law forbids the taking away of life save for food; and even then, pardon is to be implored for the necessity which compels the act. When death approaches the poor solitary, vultures and other rapacious birds, which espy or scent their prey at an incredible distance, assemble in flocks, and, darting upon the body, commence their repast even before life is extinct. The traveller continually sees remains of this faithful servant of man, exhibiting sometimes the perfect skeleton, covered with a shrunk shrivelled hide, sometimes the bones only,

altogether deprived of flesh, and bleached to dazzling whiteness by the scorching rays of a desert sun.

CONVERSATION.—There is no part perhaps of social life, which affords more real satisfaction than those hours which we pass in rational and unreserved conversation. That conversation, however, may answer the ends for which it was designed, the parties who are to join in it must come together with a determined resolution to please and be pleased.

In the conduct of it, be not eager to interrupt others, or uneasy at being yourself interrupted, since you speak either to amuse or instruct the company, or to receive those benefits from it. Give, therefore, leave to speak in turn. Hear with patience, and answer with precision. Inattention is ill manners; it shows contempt; and contempt is never forgiven.

Trouble not the company with your own private concerns; you do not love to be troubled with those of others. Yours are as little to them as others' are to you. You will need no other rule whereby to judge of this matter.

Contrive, but with dexterity and propriety, that each person may have an opportunity of discoursing. By observing this rule, every one has it in his power to assist in rendering conversation agreeable; since, though he may not choose or be qualified to say much himself, he can propose questions to those who are able to answer them.

PRAYER.—There is something in the very act of prayer, that for a time stills the violence of passion and elevates and purifies the affections. When affliction presses hard, and the weakness of human nature looks round, in vain, for support, how natural is the impulse which throws us on our knees before Him who has laid his chastenings upon us! and how secure, how encouraging, is the hope that accompanies our supplication, for his pity! We believe that he who made us can not be unmoved with the sufferings of his creatures; and while sincerely asking his compassion, we almost feel that we receive it.

REASON AND INSTINCT.—Reason and instinct have obvious differences; yet the more intelligent animals, in some of their actions, approach so near to reason, that it is really surprising how small the distinction appears.

The great and most striking superiority of reason seems to consist in this point: the capacity of knowing and acknowledging our Creator, and understanding his commands; this peculiarity of reason has the solemn effect of rendering its owner responsible for his conduct in obeying those behests.

Reason also is capable of perpetual improvement. Instinct is not. However close, therefore, be their situation at any given time, if one stands still while the other advances, the distance between them will at length become all but infinite.

Which is the greatest calamity of man, the loss of reason, or the misuse of reason?

That which will incur the greatest punishment.



Arab Robbers.

THE ISHMAELITES, OR ARABS.

EVERY traveller, in passing through Arabia Petra, or Stony Arabia, is struck with the near resemblance between the present and ancient character and customs of this people, whether it relates to their political, social, or religious features. The virtues and the vices for which the immediate descendants of Ishmael were distinguished, now mark the more remote posterity of that "wild man"—the Bedouins of the desert. In one particular they are a living fulfilment of a prophecy made to his mother Hagar, "his hand shall be against every man, and every man's hand against him," for they are, in the strictest sense, *common robbers*.

It was predicted that the descendants of Ishmael should multiply into twelve tribes, or families, and become a great nation; that they should "dwell in the midst of their brethren;" in other words, that they should be surrounded and harassed by other nations, yet they should still "dwell"—never be utterly destroyed. It was also prophesied that they should make head against a mighty empire, and like so many locusts should "plague the third part of men." Let us examine the fulfilment.

Ishmael had twelve sons, each father of a tribe, and they dwelt in the immediate vicinity of the other offspring of Abraham; the descendants of Lot, and of Esau, the father of Edom. They rapidly increased, and in a short time their neighbors on the north and east, as well as the descendants of Joktah in Arabia Felix, were incorporated with them. They early traded with Egypt in spices, and with Tyre in

ebony, ivory, cloths, spices, jewels, &c. They were chiefly nomades, or wanderers—"wild men"—taking about with them large numbers of cattle, and living in tents without any permanent place of abode. They were early distinguished for their robberies, lust, avarice, and revenge, and such is their character to the present day. They were then, as now, "such as, (in the language of a Roman writer) one would neither wish his friends nor his foes." Such being their character, every conqueror desired to root them out from their rocky fastnesses, yet no one ever effected his object, though he pursued them to their borders. They harassed Gideon, who chastised them severely; they sent presents to David and Solomon, yet these were not tributes, for the Arabians were not conquered by either of them; and in the vast army of Shishak of Egypt, which he marched against Rehoboam, not an Arab or Ishmaelite was seen, but, on the contrary, he was obliged to place a military line along their frontiers to protect his country from their ravages. They frequently made incursions into Judea and other neighboring provinces, and sometimes received severe chastisements, yet for centuries, while every nation around them changed masters, and became tributaries, Herodotus asserts, that in his time the Arabians were, as they ever had been, "free from tribute"—were unsubdued. They exasperated Alexander the Great, by some act of contempt, and he prepared to conquer or ruin them, but death frustrated his plans. Antigonos, his successor, attempted to chastise them, but he met with defeat, and was obliged to make a treaty with them almost upon their own terms. Pompey overran a part

of their country, but his army being recalled, the Arabs followed them at the heels till they left the country, and then terribly ravaged the Roman territories in their vicinity. In the year 23 B. C., Gallus, a Roman general, sailed up the Red sea with the intention of subduing them, but was defeated; and A. D. 120, Trajan made another attempt, and even besieged Petra, their capital, but lightning, hail, whirlwinds, swarms of flies, and other miseries obliged him to abandon the siege. About A. D. 200, Severus twice unsuccessfully besieged it with a powerful host, and many engines of war. For about four hundred years subsequent to this, we find the Arabs alternately allied with the Persians and the Romans, but at no time their tributaries.

In the seventh century, Mohammed, an Arabian of Hejaz, arose, propagated a new religion, and with his sword in one hand and his creed in the other, he subdued all Arabia, most of Western Asia, all Africa north of the Senegal river, together with Spain, Sicily, and many European islands, all which constituted an empire seven thousand miles in length. Internal wars first, and finally the ravages of the Tartars, about the year 1200, reduced this wide-spread empire, and in the next three centuries the Ottomans, Turks, and Spaniards, annihilated the remaining fragments in Africa and Spain. But Hejaz, the original country of the Ishmaelites, was never reduced, and at this time the Turkish sultans pay them an annual tribute of forty thousand crowns for a safe passage to their holy cities, Mecca and Medina. And, if the payment of this sum is neglected, the Arabs pay themselves by robbing the caravans and companies of pilgrims; or, as has been the case several times within the past and present centuries, by ravaging portions of Syria and Mesopotamia. They are now, as they ever have been, *wild men*; their hands are against every man, and every man's hand against them. Through Mohammed and his religion, they have like so many locusts, plagued "the third part of men" (witness the extent at one time of the Saracen empire): and yet they have dwelt, and still "dwell, in the presence of all their brethren." For a detailed account of the Bedouins, or Arabs, we refer the reader to the published records of the travels of Laborde, Buckingham, Stephens, and others.

FLATTERY.

THAT society is often based upon false principles, yielding the palm of preference to those whose external appearance may be most pleasing to the artificial eye, is clearly proved by the knowledge of the customs of almost every people. The diamond often dazzles far more than the lustre of mind; while he, whose mind is stored with useful knowledge and decorated in homelier attire, is often excluded from the presence of those who would arrogate to themselves all claims to superiority.

But what is it that has given the worthless and avaricious such a potent charm, in keeping the artificial link of society bright? It is FLATTERY! The

designing use this weapon when all others fail. The miser pours it out upon those whose purse he would shorten; the politician deals liberally with encumbrances upon the people, from whom he derives the emoluments or honor of office. The love of approbation is innate in the constitution of man; its sparks are first kindled in the bosom of the cradled infant, glowing with intense power, until manhood has developed its faculties. Young has described it thus.

"The love of praise, howe'er concealed by art,
Reigns, more or less, and glows in every heart;
The proud to gain it, toils on toils endure;
The modest shun it, but to make it sure.
O'er globes and sceptres, now on thrones it swells,
Now trims the midnight lamp in college cells;
'Tis tory, whig; it plots, prays, preaches, pleads,
Harangues in senates, squeaks in masquerades,
It aids the dancer's heel, the writer's head,
And heaps the plain with mountains of the dead,
Nor ends with life, but nods in sable plumes,
Adorns our hearse, and flatters on our tombs."

Such is the love of praise, and by a kind of instinct we naturally think well of those who administer to our vanity, and shun those who dwell in disparagements against us, and who regard us with an envious eye. Thus it is that the deceitful, by taking advantage of this frailty of human nature, gain an ascendancy over our affections which would have been produced by no other artifice. Many a heart has bled with the arrow of Cupid, which was sent upon its winged message by the breath of flattery; many a fire has glowed upon the altar of Hymen, which has been fanned by its mystic influence; but it never won one sensible heart, nor kindled one true fire! Nevertheless it has left many a heart with an aching void, and deceived many into regions of fancy who had been borne upon its light fluctuating wings.

The great study of our lives, then, should be to know ourselves, and then to stand erect even among the competitors for our friendship, knowing that truth can only administer to our happiness, and overshadow the heart with permanent radiance. He who is truly our *friend*, will not scruple to lay our faults before us, but he who deals in flattery is neither our lover nor friend—no matter for his solemn protestations of attachment. Let self-approbation lead us to the cultivation of our minds, in the purifying of the heart, without leaving us to be wrecked upon the shoals of human folly in becoming the victims of avarice and lust.

EXPERIMENTS.—Draw a landscape with Indian ink, and paint the foliage of the vegetables with muriate of cobalt, and some of the flowers with acetate of cobalt, and others with a muriate of copper. While this picture is cold it will appear to be merely an outline of a landscape, or a winter scene; but when gently warmed the trees and flowers will be displayed in their natural colors, which they will preserve only while they continue warm. This may be often repeated.

WRITE upon paper with a diluted solution of muriate of copper; when dry it will not be visible, but on being warmed before the fire, the writing will become of a beautiful yellow.



GOLDSMITH—from the Portrait by Sir J. Reynolds. Goldsmith's Mill at Auburn—from a picture painted by Creswick.

LOCAL MEMORIES OF GREAT MEN.

GOLDSMITH.

Few of our writers possess a more abiding place in the hearts and memories of the people than the author of "The Traveller," "The Deserted Village," and "The Vicar of Wakefield;" and few have drawn so entirely from their own personal observations and experiences. Byron has impressed his own stamp on all his productions, but it is only of himself as an isolated individual; and Burns has sung his feelings in varied situations, but his mind has projected itself into a wider sphere, whence he acquired a knowledge of, and a power of depicting, human

character far beyond his own personal experience. To all of them, however, this quality has given them an earnestness and a reality that strikes at once on the heart of a reader. In Goldsmith this is united to an amiability and kindness that render him more like a companion, and in which, and in his simple truthfulness, he more resembles Cowper than any other of our poets. "The Traveller," commencing with a feeling recollection of home, describes the characteristic features of the European nations which he had visited, and in some of which he had partaken of the enjoyments he narrates. In "The Deserted Village," Auburn is Lissoy; every spot and every person is identified; and his beau-ideal of political economy is the cottier system to which he had been ac-

customed, "where every rood of ground maintained its man." In "The Vicar of Wakefield," the vicar was his father; himself was George; the family economy was what he had seen; both his sisters were privately married under unpleasant circumstances, through not with such painful consequences as that of Olivia. Squire Thornhill is an Irish squire; Moses and his bargain of the green spectacles was founded on a misadventure of his father; Jenkinson's pedantic pretensions must have been witnessed by him during his literary career; and of the plot the great merit is its truth and simplicity. "The Citizen of the World" and his "Essays" rest mainly upon similar foundations. His plays are alike said to have been founded on personal events, and in "The Good-natured Man" he no doubt drew from himself. In his poems he is commonly said to have formed his style upon that of Pope; and, as he greatly admired that poet, he probably to some extent did so, but it has less monotony of cadence, the thought is not so much compressed into couplets, and in these and other of its features, such as the condensation of idea, frequently reminds us of that of Dryden, "without one faulty line," as was said by Johnson. In his novel he had no immediate model, unless Fielding's "Amelia" may have given the hint for a domestic story whose interest should arise from the unexaggerated incidents of private life, but beyond this there is no resemblance. His plays contain some wit, much humour, easy and natural dialogue, and sketchy but feeble delineations of real character; they are indeed rather farces of a superior kind than regular comedies. We are, however, not about to enter into a criticism of his merits, which are sufficiently established, but to give a sketch of his life with reference to its localities, and few lives afford a greater or better identified variety.

Oliver Goldsmith was of an Irish family, and born at Pallas, or Pallasmore, in the parish of Forganey or Forney, in the county of Longford, on the 10th of November, 1728. His father was the Rev. Charles Goldsmith, who, from an early and improvident, though not otherwise an unhappy marriage, was for twelve years dependant on the kindness of his wife's uncle, rector of West Kilkenny, whom he assisted in his duties. He had a family of seven children, of whom five were born at Pallas, and of these five the youngest was Oliver; but, in 1730, on the death of the uncle Mr. Green, Charles Goldsmith was instituted to the rectory of Kilkenny West, and immediately removed to Lissoy, a small village not far from Athlone. The house at Pallas is now wholly pulled down, and that at Lissoy a shapeless ruin; but, as we have already said, many of the features of Auburn are yet to be traced. In the engraving is shown the "busy mill" as it is seen at present, from a painting by T. Creswick, with the loan of which we have been favored. In the village, under an old woman and an old soldier, he received the first rudiments of education where he acquired the character of being "impenetrably stupid," but why does not so distinctly appear, unless for liking better to listen to the old soldier's adventures and his tales of fairy-land, than poring over his lessons, as he early displayed a great avidity

for reading, wrote childish rhymes, and distinguished himself by keenness though not readiness of repartee, while his kindly disposition and good temper are praised, and his fondness for listening to the ballads of the peasantry, many of which he could repeat at a later period of his life, is also recorded.

In 1739 he was removed to a school of a higher class at Athlone, and thence, in 1741, to Edgeworth's Town, where he remained till his admission into Trinity College, Dublin, which he entered as a sizar, in consequence of the embarrassed circumstances of his family, in June 11, 1745. Here he continued, with mutual dissatisfaction to himself and his tutors, till February, 1749, when, notwithstanding suspensions, reprimands, his struggles with poverty (to relieve which it is said he wrote street-ballads, for which he received five shillings each), and numerous stories of his idleness and eccentricities, he was in due course admitted to the degree of A. B.

His father had died while he was still at college, and his mother, much reduced in circumstances, though not destitute, now lived at Ballymahon. To her he returned on leaving Dublin, and having declined entering the church, having also foolishly squandered the money raised to enable him to study the law, he seems to have spent about two years in amusing himself with the sports of the country, and as a private tutor or companion in a gentleman's family, the latter not much apparently to his own satisfaction. Mr. Douglas Allport has made it pretty clear, we think, that he was usher to Dr. Milner, at Peckham, about 1751, and not at an after-period, as has been generally stated. His evidence is from the diary of a gentleman who had two sons at Dr. Milner's school, furnished by a lady, the daughter and niece of the two pupils: his entries state that the first was placed there "on January 28, 1750-51; the other, the first week after Easter, April 15, 1751. He said Mr. Oliver Goldsmith was about twenty-three; a dull heavy-looking man." This gentleman, with his sons, left Camberwell for Wokingham, in July, 1754. Mr. Prior, in his Life of Goldsmith, says, he "went there toward the end of 1756, or the beginning of the following year," and adds a statement of Miss Milner's, that he was with her father about three years; this, as he himself observes, must be erroneous, as incompatible with his other well-ascertained occupations; and in addition, Dr. Milner died in June, 1757. From the end of 1750 till the autumn of 1752, when we find him at Edinburgh, a space is found for this engagement, which we find at no other period of his life; and as he continued his acquaintance with the family, he may have visited frequently at the latter period, and there become acquainted with Griffiths as is commonly stated. The house still exists at Peckham, and is known by Goldsmith's name.

With the assistance of his friends, Goldsmith, it is certain, went to Edinburgh to study medicine, and thence, to complete his education, to Leyden in 1754. At both places he evinced his usual eccentricities, and his letters, from their style and subject, show more attention to literary than to medical art, in the latter of which he took no degree at either of these universities. In February, 1755, he left Leyden in

order to gratify his curiosity by visiting different parts of the continent; and this he performed on foot, and in spite of great pecuniary difficulties." In this way he visited Flanders, France, Germany, Switzerland, and Italy; and in one of the universities, probably at Padua, he received his doctor's degrees; his remarks and adventures are supposed to be embodied in those of George Primrose, in the "Vicar of Wakefield."

In 1756, Goldsmith first arrived in London, intending to practise physic; and at this period, if at all, for a short time was usher of a school in Yorkshire. In London he renewed his acquaintance with the Milners, and probably by them was introduced to Griffiths, who engaged him as a writer in the "Monthly Review." His engagement with Griffiths was for a year, but mutual dissatisfaction arising, it terminated at the end of five months; he next contributed to the "Literary Magazine," and thence commenced his literary drudgery, which continued throughout his life with a few short intervals, but—what few others have had—he had strength to emerge from this slough, and

"Mount far off among the swans of Thames."

While pursuing this course, he lived, in 1757, in a court near Salisbury square; in 1758, at No. 12, Green Arbor court, Old Bailey; in 1760, at Wine-Office court, Fleet street; and occasionally at Canonbury house; in 1767, he removed to the Temple where he occupied successively apartments in 2, Garden court, in King's Bench walk, and No. 2, Brick court, where he died.

Having thus gone through his residences, we now return to detail the principal incidents of his career. In 1758, he endeavored to procure a medical appointment to India, but was rejected by the College of Surgeons for want of being sufficiently qualified. In 1759, he wrote "An Inquiry into the present State of Polite Learning in Europe," a clever work in thought, and pleasing in style, but incomplete in its information; and he also contributed to the "Bee." In 1760, in conjunction with Smollett and others; the "British Magazine" was undertaken, and in Newbery's paper, the "Public Ledger" he gave to the public his "Citizen of the World," and the "History of Miss Stanton," the first germe of his "Vicar of Wakefield." About this period he seems to have passed his summer months in a lodging at Canonbury house, and while here he published his "Traveller" and wrote his "Vicar of Wakefield." This latter has been stated to have been written on the spur of a pressing necessity; but, as we have noticed, a sketch of part of the story had previously appeared, and the work bears no marks of haste; it is more probable that it had been long the work of his leisure, and was certainly sold for him by Dr. Johnson for 60*l.*, when in much want of money; but the bookseller was so doubtful of success, that it remained unpublished till 1766, when his fame as the author of "The Traveller" gave better hopes of its being favorably received. In December, 1764, appeared his "Traveller," for which he received twenty guineas, and of which four editions were published

by the following August. In 1766-'67, he wrote his first comedy, "The Good-natured Man," which, after much delay, and almost a quarrel with Garrick, was acted successfully on January 29, 1768, at Covent-Garden, producing him probably 450*l.* In this year he also concluded an agreement for writing the "History of Rome," for which purpose he retired to a cottage near Cannons, by Edgeware; this work is written with great ease and clearness, but not remarkable for historical research or accuracy. In the following year he commenced his "Animated Nature," to which a similar remark may be applied; both were and continue to be popular as school-books. On the 26th of May, 1770, the first edition of the "Deserted Village" appeared, and on August 15, the fifth was issued, a satisfactory proof that good poetry is encouraged when it is produced, for certainly it bears little resemblance to the style then said to be fashionable. He now made a short excursion to Paris, of which few memorials have been left. In this year also he wrote the "Haunch of Venison." In 1771, he undertook his "History of England." During its composition he lodged at a farmhouse in Hyde lane, near Kenton, also in the vicinity of Edgeware, and here was also produced "She Stoops to Conquer," which was acted with marked success on March 15, 1772, in defiance of the forebodings of Colman the manager, and the half-disclosed opinion of Garrick. In 1773, he translated the works of Scarron, and wrote his poem called "Retaliation;" and this, though he continued laboring to the end, was his last important work, he having died on the 4th of April, 1774, in consequence, it is stated, of his own imprudent treatment of his disorder, having persisted in taking ipecacuanha and James's powders, in spite of the remonstrances of his medical attendant. He was buried in the Temple churchyard, and a simple monument, bearing Dr. Johnson's celebrated inscription, was raised to his memory in Westminster Abbey.

There are perhaps few persons of whom a more numerous or a more entertaining stock of anecdotes are narrated, but we have omitted them, as we think most of them have originated with or been related by persons not having a true understanding of him, and tending to give a false impression of what we think his real character. Boswell and his clique seem to have considered him as quite a simpleton; and even Johnson, though generally defending him from such imputations, has called him "an inspired idiot." The esteemed friend—friend in a far higher sense than that of the relation in which Boswell himself stood—of Edmund Burke, Johnson, Reynolds, Garrick, and other eminent men, could not have been the fantastic fop, the jealous disparager of merit in others, the conceited boaster, the idle and apathetic student, and the general butt of all companies, which it has pleased the world to consider him. His peach-blossom coat may have been somewhat extravagant even in an age of gayer clothing than our own, but he himself inquires as to its elegance, and probably thought less of it than his recorder. If he said that he could play Punch better than the performer, was it not rather in reference to its lowness as an art than with an intention of himself descending

to its practice? He was certainly an absent man, apparently not a ready speaker, and had a deeply seated love for wit, mirth, and fun; yet no one had a more perfect knowledge of his defects and weaknesses than himself; no one knew better that

“—prudent cautious self-control
Is wisdom's root:”

he has inculcated this; but his nature was genial, and his feelings impulsive; his buoyant spirits led him to extravagances of behavior or expression, and his sympathies to imprudences; neither led him even to the verge of meanness or dishonor. In his love of mirth he cared little for the moment whether he was laughed at or with, and he preferred leaving ablunder, a misconception, or a paradox, to be sported with, to either explaining or defending it. The mind of Goldsmith was by no means disputatious; those of most of his associates were: and it is remarkable how often Boswell relates his offering opinions of considerable weight (though Boswell laughs at some of them because opposed to those of Johnson), which he leaves at once to their fate, or to the voluntary support of others, frequently of Johnson himself. We can well imagine the quiet glee he enjoyed at witnessing Johnson, while talking for victory, urging his vehement reasons and arguments, to which, while fondly admiring the ingenuity and talent of the man, he was repeating to himself the *Fudge* of his own Burchell, and still more so in the case of many others. “Magnanimous Goldsmith” chose to be “gooseberry fool,” soft, sweet, and simple. But let himself lift the curtain. Did ever any “gooseberry fool” beside himself see so distinctly, and delineate so sharply yet kindly, the characters of his friends? His portrait of Edmund Burke, in fourteen lines, contains all the truth that could be said in volumes; and of Cumberland, the dramatist,

“who made it his care
To draw men as they ought to be, not as they are,”

what can be more sarcastic? or more amiable than the apology that

“He grew lazy at last, and drew from himself?”

That of Garrick, and indeed of every individual mentioned, are equally excellent; while the allusion to himself of “I shall compile,” gives a cordial finish to the whole, that is delighted. This poem, the “Retaliation,” was not finished when he died, or we might have had in addition the picture of Johnson, and perhaps Boswell, if we could suppose that he would have sported publicly with one he revered so much, and one of whom he thought so little.

We have had many authors with more correct and extended knowledge, we have had some with a deeper insight into human nature, some with a more excursive fancy; but for kindness of feeling, truthfulness of description, purity of morals, melody of versification, and for the calm pleasure which we always feel in reading his works, he is equal to any.

SIGNERS OF THE DECLARATION OF INDEPENDENCE.

THE following is a list of the names, times of birth and death, age, and states represented by each, of

the immortal signers of the Declaration of Independence.

Names.	State.	Born.	Age, time of signing.	Died.	Age.
Samuel Adams,	Mass.	1722	54	1803	81
Robt. Treat Paine,	“	1731	45	1814	83
John Adams,	“	1735	41	1826	91
John Hancock,	“	1737	39	1793	65
Elbridge Gerry,	“	1744	32	1814	70
Stephen Hopkins,	R. I.	1707	69	1785	78
William Ellery,	“	1727	49	1820	93
Josiah Bartlett,	N. H.	1720	47	1790	66
Matthew Thornton,	“	1714	62	1803	89
William Whipple,	“	1730	46	1785	55
Oliver Wolcott,	Conn.	1726	50	1797	71
Roger Sherman,	“	1721	55	1793	72
Samuel Huntington,	“	1732	44	1796	64
Wm. Williams,	“	1731	45	1811	80
Philip Livingston,	N. Y.	1716	60	1778	82
Wm. Floyd,	“	1734	42	1821	87
Lewis Morris,	“	1726	50	1798	72
Francis Lewis,	“	1713	63	1802	89
Fran's. Hopkinson,	N. J.	1737	39	1790	53
John Hart,	“	1715	61	1780	65
Abraham Clark,	“	1726	59	1794	68
Richard Stockton,	“	1730	46	1781	51
John Witherspoon,	“	1722	54	1794	72
Benjamin Franklin,	“	1706	70	1790	84
James Smith,	“	1718	58	1806	88
Benjamin Rush,	“	1745	31	1813	68
George Clymer,	“	1739	37	1818	74
Robert Morris,	“	1733	43	1806	73
George Ross,	“	1780	46	1799	69
George Taylor,	“	1716	60	1781	66
John Morton,	“	1724	52	1777	53
James Wilson,	“	1743	33	1798	55
George Read,	Del.	1734	42	1798	64
Cæsar Rodney,	“	1730	46	1783	53
Thomas McKean,	“	1734	32	1817	83
Charles Carroll,	Md.	1737	39	1832	95
Thomas Stone,	“	1743	33	1787	44
William Paca,	“	1740	36	1800	60
Samuel Chase,	“	1741	35	1811	70
Thomas Jefferson,	Va.	1743	36	1826	83
Benjamin Harrison,	“	1745	31	1799	54
Fra's. Lightfoot Lee,	“	1734	42	1794	62
Richard Henry Lee,	“	1732	44	1794	62
George Wythe,	“	1726	50	1806	80
Thomas Nelson, Jr.	“	1738	38	1789	51
Carter Braxton,	“	1736	40	1797	61
John Penn,	N. C.	1741	35	1788	47
Joseph Hewes,	“	1730	46	1779	49
William Hooper,	“	1742	34	1790	48
Thomas Lynch, Jr.	S. C.	1740	36	1780	40
Arthur Middleton,	“	1733	43	1788	53
Edward Rutledge,	“	1740	36	1800	65
Thomas Heyward,	“	1746	30	1809	60
Burton Gwinnett,	Geo.	1732	44	1777	45
George Walton,	“	1740	36	1804	54
Lyman Hall,	“	1731	45	1791	60

Dignity does not consist in possessing honors, but in deserving them.



RAMA.

On the road from Joppa to Jerusalem, about nine miles from the former town, and thirty miles from the latter, occurs a town which now bears the name of Rama, or Ramla, and is usually identified with the Arimathæa of the New Testament. Jerome, after indicating the situation so as to show that he had this place in view, speaks of it under the name of Arimathœa; and as he stated the prevalent opinion of his time, it has scarcely been since questioned. It is easy, indeed, to see that the name Arimathæa is but a Greek modification of the Hebrew Rama or Ramah. We have mentioned on former occasions that several places of this name occur in the Old Testament: and hence, it is reasonable to conclude that the Arimathæa of the New Testament is sometimes noticed in the Old by this its more ancient and still surviving name; although, from the want of discriminating indications, we are unable to distinguish the occasions on which it is named. Jerome seems to describe it as a small village, then the sole remains of a noble city built by Solomon, coupling it in this notice with Beth-Horon which Solomon built in this district. That magnificent monarch certainly built Beth-horon (1 Kings ix. 17; 2 Chron. viii. 5), but we find no notice of his building a place called Ramah. It is doubtless, however, the same place which is mentioned in the history of the Maccabees under the name of Ramathem (1 Macc. xi. 32); and must then have been a place of consequence, as it gave name to one of the governments of Samaria. We

again find it a place of very great importance in the early ages of the Moslem dominion, and distinguished by the Arabian geographers as the metropolis of Palestine. When the crusaders arrived in the Holy Land they found Rama a fenced city, abounding in all the luxuries of the East. It was exceedingly populous, adorned with stately buildings, and well fortified with walls and towers. Rama and the neighboring town of Lydda were the first two places in Palestine which fell into the hands of the Christians. The former was gained without resistance, the inhabitants having evacuated the town on the approach of the crusading army. There are existing remains to attest the importance which Rama in those times possessed, and which it has never since recovered.

The buildings of the present Rama are spread widely over the face of the level plain in which it stands, and which is described as one of the most fertile parts of the Holy Land, resembling a continued garden. The town makes rather an imposing appearance in the distance; and stands embosomed among olive, fig, and pomegranate trees, and surrounded with large nopals, which shoot up into singular shapes, and confusedly pile their tufts of prickly pallets one upon another. This mingled group of trees and houses is overtopped by some of the finest palm-trees in the country. The adjacent country is to a considerable extent planted with lofty olive-trees, disposed in quincunxes, the greatest part of which are said by Volney to have been as large as the walnut-trees of France. Amid these plantations we meet at every step with dry wells, cisterns fallen in,

and vast vaulted reservoirs, which prove that in ancient times the town must have been upward of a league and a half in circumference. The subterraneous cisterns at Rama are mentioned with admiration by most travellers who have visited the spot. Buckingham considers them not inferior in extent or execution to many of those at Alexandria. Rama, like most other towns, disappoints the expectations which a distant view may have created. Much of the town is in a ruinous state, and rubbish constantly occurs. Chateaubriand describes the houses of Rama as plaster huts crowned with a small dome. But this author, as well as Clark and Volney, saw it to disadvantage, in very troubled times; and since then it has somewhat revived. Buckingham says, "The style of building here is that of high square houses with flattened domes covering them; and some of the terraced roofs are fenced around with raised walls, in which are seen pyramids of hollow earthenware pipes, as if to give air and light, without destroying the strength of the wall itself." There are some remains of Gothic architecture, doubtless the work of the crusaders: of these the most remarkable specimen is exhibited in the tower of the great mosque, which, however, has received some incongruous Saracenic additions. The population is estimated by Buckingham at 5,000 persons, two thirds of whom are Christians of the Catholic and Greek communions; and the rest Moslems, chiefly Arabs. The principal occupation of the people is husbandry, for which the surrounding country is highly favorable; and the staple commodities produced by them are corn, olives, oil, cotton, with some soap and coarse cloth made in the town.

THE PILGRIMS.

THE character of those resolute Englishmen who first settled upon the uncultivated shores of Massachusetts, the principles which governed them, the events connected with their history, both in Europe and in America, should never be forgotten. Their characters were composed of stern, enduring materials, of moral courage, of active and suffering virtue; their principles were piety to God, love of freedom, a conscientious adherence to duty, and a provident and most generous regard for posterity: and the story of their enterprise, sacrifices, and labors, serves to show what may be effected by men acting under the influence of religion, and a deep sense of their obligations to promote the moral good of future generations. With these impressions, we here cheerfully give place to a few hasty remarks, touching our ancestors, the first English inhabitants of New England.

We are aware, that this subject has been frequently brought before the public. But can it be too often considered? Does not gratitude both to God and man require us to dwell upon it? Is it not useful to contemplate the characters and deeds of those brave and holy men? Can it fail to excite and strengthen a public spirit, a love of civil and religious freedom,

ardent feelings of benevolence, and elevated sentiments of piety?

It is almost universally admitted, that our ancestors, the founders of New England, were virtuous and religious men. Yet it is often said, by way of objection to them, that they were unreasonably strict, and in some degree chargeable with intolerance and bigotry. But what if we admit, that imperfection cleaved to their characters; that they laid undue stress upon some speculative and unimportant points, or were even intolerant in some cases, though in theory they were advocates for the rights of conscience; there still remains so much to admire and to imitate, that we are fully justified in holding up their characters and principles as worthy of uncommon praise.

The consequences of the enterprise, which originated in their rare and disinterested virtue, have been extensively beneficial. But these effects perhaps, will be attributed, in part at least, to the state of the world, and to circumstances not altogether under their control: Be it so. A new world was open before them; and a theatre was prepared by the God of nature for the exhibition of their generous dispositions and noble purposes. Still the heaven was in them; in their principles, in their disinterestedness, their unconquerable love of liberty, their resolute adherence to duty, and to the voice of God, speaking to them in his holy word.

Do we realize how much we owe to these men? Do we consider how much they suffered in our behalf? Do we appreciate, as we ought, their respect for the rights of conscience—their resolution, their perseverance, their sacrifices, their disregard of self, and their willingness to endure reproach, persecution, and the loss of all things worldly, for the cause of truth, of freedom, and of religion?

These are the traits of character, for which (with all their mistakes and imperfections) we are called upon to cherish a grateful and respectful sense of the memories of our ancestors. They opposed civil and ecclesiastical tyranny, at the hazard of everything personal and everything worldly. They felt their responsibilities as rational and moral beings. They were diligent and faithful in seeking to learn their duty and the divine will; and under the guidance of a spirit of piety, of a pure conscience and of a sound mind, they devoted themselves to defend the cause of truth, with an ardor and firmness, not exceeded, if equalled, since the days of the apostles.

It is almost impossible to estimate the blessings and benefits of their resolute efforts too highly. It is appalling, even in imagination, to think of the despotism, bigotry, ignorance, and degradation, which would have still covered the earth, had not the English puritans, the Leyden and Plymouth pilgrims, the Massachusetts company of non-conformists, opposed most resolutely the united power of the crown and the mitre, and thus exposed themselves fearlessly to persecution, poverty, and martyrdom.

But, blessed be God, "the darkness is past, and the true light begins to shine." Luther and Calvin began the glorious work of religious reformation, which shed a cheering light upon the cause of civil

liberty. "The former can not exist without the latter." The puritans, says the royal historian Hume, "kept alive the spark of political freedom, in the days of the Charleses and of James II. But they stopped far short of perfection. They, indeed, resolved to see with their own eyes, and not to trust to the limited and cloudy vision of their predecessors; and yet, they would have had all others see only as they saw." Not so the celebrated, the prophetic Robinson. He perceived that "more light was to break forth from the word of God." He believed that "the kingdom of God was progressive;" and with a truly Christian and liberal spirit, he exhorted his people, "to examine and think for themselves; and to follow him only in so far as he had followed Christ and his gospel."

This is the spirit which is to regenerate and improve the world. It recognises "the march of mind;" it encourages inquiry; it provides for constant progression in the cause of moral truth and human happiness. It is with these impressions and under these convictions, that we are led to anticipate the vast benefits flowing from the principles and efforts of our pious forefathers. The most happy and the most extensive results are evidently to follow from the diffusion of such a spirit, and from an imitation of the noble example of the Puritans.

At the present day, indeed, and especially in our favored country, we need not fear persecution, or chains, or tortures. But are we not accessible to the ignoble and debasing influence of low ambition, of ease, and wealth, and of a love of popularity, which may deter us from the exercise of that independent spirit, which our fathers exhibited—to do and suffer ourselves for the great good of posterity and of mankind? "Nothing important," says the elder Mr. Adams, "is to be achieved, but by great efforts and perseverance, but by disinterested and ardent patriotism."

The merits of Williams, Carver, Robinson, Bradford, Winslow, Standish, and Brewster, of Endicot, Winthrop, Phillips, Saltonstall, and others, have been often and justly recited. But there was a Shirley, an Andrews, a Beauchamp, and a Hatherly (most of whom never came to America), without whose generous co-operation and support, the feeble band of the pilgrims would have been broken in pieces, and scattered to the four winds of heaven.

Sons of the pilgrims, go on in the glorious career which they commenced, under so many obstacles and discouragements. They have trodden the path to immortality. Let us build upon their foundation. Let us cherish the interests of learning and of religion, the cause of free inquiry and of civil liberty; and strengthen and improve the institutions which they established. Let us imitate their virtues, imbibed their noble spirit of independence, and their pre-eminent love of truth; and thus contribute our humble part to the improvement and happiness of our race.

AUSTRALIA, the Land of Contraries.—The north breeze is the hot wind, and the south the cool; the westerly the most unhealthy, and the east the most

salubrious; it is summer with the colonists when it is winter at home, and the barometer is considered to rise before bad weather, and to fall before good, the swans are black, and the eagles are white; the mole lays eggs, and has a duck's bill; the kangaroo (an animal between the deer and the squirrel) has five claws on his fore paws, three talons on its hind legs, like a bird, and yet hops on its tail. There is a bird (melliphaga) which has a broom in its mouth instead of a tongue; a fish, one half belonging to the genus raia, and the other that of squalus. The cod is found in the rivers, and the perch in the sea; the valleys are cold and the mountain tops warm; the nettle is a lofty tree, and the poplar a dwarfish shrub; the pears are of wood, with the stalks at the broad end; the cherry grows with the stone outside; the fields are fenced with mahogany; the humblest house is fitted up with cedar; and the myrtle plants are burnt for fuel; the trees are without fruit, the flowers without scent, and the birds without song. Finally, in New South Wales honesty is the best policy, and the greatest rogue becomes converted into the most useful citizen. Such is Terra Australia.

INDUSTRY.—Demosthenes, when asked the first requisite to eloquence, replied, "action"—when asked the second, he replied "action"—and the third, he replied "action." Industry bears the same relation to agriculture, that action did to eloquence in the estimation of the Athenian orator. With industry the farmer may accomplish everything, without it, he can do nothing. Let him then study the value of time. Time is his great capital, and should be well invested. The wealth of the world, its high civilization, and all its magnificent improvements, have been created and fashioned by the labor and industry of man, the poorest soil and most unfavorable climate are scarce impediments to an industrious and energetic people. Look at Holland, reclaimed from the ocean, fenced in by her embankments and mud walls, literally a smiling garden, where once there was nothing but bogs and ocean waves. Look at Switzerland, where an industrious but hardy peasantry, contending against the avalanches of snow and ice, and mountain masses of rock, falling and crushing for miles everything before them, have cut the hills and mountains in terraces, and planted them with vines. Lands, which before were worse than nothing, by this improvement sell for ten thousand francs per acre

RULES OF CONDUCT.—Adhere most scrupulously to truth, and labor to preserve the strictest integrity, simplicity, and sincerity.

Strive to be as kind, forbearing, and forgiving, as you can, both to friends and foes.

Never speak evil of any one, on any pretence whatever.

Strive to recommend religion by the courtesy, civility, and condescending character of your conduct. Mortify lusts, sensuality, and sloth.

Shut out evil imaginations and angry thoughts.



Kingston.—From a Drawing taken during the Revolution.

KINGSTON.

THE obscurity which envelops the earliest history of some ancient towns is one of the causes which renders the study of topographical antiquities so extremely interesting. Some of the cities and towns of England have existed during eighteen centuries, and the greater part of them, as well as of the villages and even hamlets, have been the dwelling-places of successive generations for above a thousand years. But how little we know of the circumstances under which they were first planted! In some cases a few coins, or weapons, or relics of domestic utensils, show that the place had a Roman origin. In others the mere mention of the spot in ancient records is all we know of its earliest existence. How different will be the case in respect to the history of the cities and towns which are now multiplying in every direction in the United States and British North America! No fabulous story will ever obscure their real origin. A thousand years hence the names of the first builders of the city, the very circumstances under which it was founded, and the records of every important event connected with its rise, will have been handed down with the minuteness of contemporary history. Topography must then be studied in a different spirit. The life of past generations can never cease to be interesting; and as the spirit of investigation will not rest satisfied with dates, it will seek fresh subjects of inquiry in connexion with the past.

Kingston, of which we give a view taken soon after it came into the possession of the English, is an ancient settlement—that is, ancient for the New World. Here, in the seventeenth century, the French missionaries established a post, in order that they might be in the midst of the Iroquois. The nature of the position was seen to be so important, that it was soon

made use of for more secular purposes, and a large fort with four bastions was erected by the French governor-general of Canada, with a view of commanding the interior. In 1830, there still remained a tower and a triangular building which surmounted one of the bastions, enough to show the strength of the old fort. The missionaries had given the name of Cataragui to their Christian outpost; but when it was converted into a fortress its name was changed to that of Frontenac, the governor-general under whose orders it was built. Lake Ontario was called after the same person. Now, neither the site of the ancient fort nor that of the grand inland sea bears his name. The former was changed to Kingston when Canada fell into the hands of the British in 1760, and the lake is known by its expressive native name, which signifies "the Beautiful lake." Kingston, which was settled partly by American loyalists after the close of the war of independence, was for some time the capital of Upper Canada, more properly called, since the union of the two provinces, Western Canada. The provincial seat of government was next transferred to York, now called Toronto; but since the union Montreal had been chosen as the chief seat of the executive and legislative bodies for both provinces. Toronto, near the western extremity of Lake Ontario, Kingston on its eastern shores, near where the St. Lawrence opens into the great lake, with Montreal and Quebec, constitute the four most important cities of Eastern and Western Canada. They are each admirably situated for commerce. Quebec is the key of the maritime part of the St. Lawrence; Montreal is the centre of the commerce between Eastern Canada and the United States, and is the seaport of the western province; and Kingston is a most important entrepôt between Western Canada and the seaports of Montreal and Quebec. If Lake Huron were united to Ontario by a canal from

Toronto, through Lake Simcoe, it would also become the centre of a large trade; and as it is, the flow of emigration west of Lake Ontario has already rendered it a place of extensive business. Quebec is 400 miles from the mouth of the St. Lawrence; Montreal is 180 miles from Quebec; Kingston is 258 miles from Montreal, by the Rideau and Grenville canals; and Toronto is 166 miles from Kingston. But by means of canals the area of communication with each place is greatly extended. The Welland canal, forty-two miles long, by avoiding the Falls of Niagara, opens an uninterrupted navigation between Lakes Erie and Ontario. The Rideau canal, 135 miles in length, begins at Kingston, and unites the Ottawa river with Lake Ontario. There are canals both from Lake Erie and Ontario which open a direct communication with New York by the Hudson river. A canal commencing at Cleveland, on Lake Erie, communicates with the Ohio river, and consequently with the Mississippi and the Gulf of Mexico, which is thus united by inland navigation with the Gulf of St. Lawrence. No country in the world possesses such magnificent lines of internal transport, and the industry and commercial activity which they are calculated to develop will become enormous as the population increases. But for these means of transport the farmer in the centre of Ohio would be unable to exchange the raw produce of the soil for articles of luxury and secondary necessity. South of Chillicothe all the chief products of agriculture are sent to New Orleans, just in the same way that the shipping demands for corn for the ports of the Black sea and of the Baltic encounter each other in the heart of Poland. The future greatness of the four great Canadian cities is rapidly rising, in consequence of the facilities of transport which they command, and the growing attractions which Canada offers to emigrants from the United Kingdom. The population of the two united provinces is now, according to the best calculation, 1,250,000, and a stream of immigration is pouring into them at a rate varying from thirty to fifty thousand persons a year.

The approach to Kingston from Montreal is very interesting. The river, which, from Montreal to its opening into Lake Ontario, changes its name from the St. Lawrence to the Cataraqui, has the appearance of a lake, and is studded with one thousand six hundred and ninety-two islets. This part is called the lake of the Thousand Isles. Opposite the city the river is divided into two channels by Wolfe or Long Island, the centre of which forms an elevated ridge, covered by a magnificent forest. The town is situated on the western bank of a short estuary, into which the Rideau canal communicates. Point Henry, a promontory rising one hundred feet above the level of the lake, and crowned with strong fortifications, commanding a narrow channel of the river, is on the opposite side of the estuary. A dangerous shoal renders it necessary to make a considerable sweep before entering the well-sheltered harbor, in the course of which the town, with the public storehouses, built of white stone, the barracks, and other public buildings, become visible; and Navy bay, the depôt of the naval force on the lakes, is passed.

The houses extend above a mile and a half along the shores of the lake, which form a gentle acclivity, the summit of which consists of a plateau of limestone rock, from which there is a magnificent view, embracing the lake, the river, the islands, and for ests. A wooden bridge, built in fifteen feet water, and six hundred yards long, is thrown across the estuary. Vessels drawing fifteen feet water come close to the wharfs, and Kingston is a principal rendezvous of the large steamers which navigate Lake Ontario. The principal streets are sixty-six feet wide, and run from north to south and from east to west, and are soon dry after the heaviest rains, in consequence of the favorable nature of the site. The fortifications have been excavated from the granite and limestone rock, and are striking from their solidity and extent. Among the most important public buildings are the provincial penitentiary and a large public hospital. The population is now about 6,000.

THE STRUGGLES OF ADOLESCENCE.

THE passage from boyhood to youth was marked among the Romans by a ceremonious investiture with what they called the *toga virilis*, or robe of manhood. I presume this was put on at a certain age, so that there could be no dubiety about the matter. The boy was a boy one day; next day, he was a man; all the world acknowledged the transition, and there was no more to be said. It is very different in the present day, where a lad will sometimes hang for a year or two in a doubtful state between boy and man, to the great discomfort of himself, and not without some inconvenience to his neighbors, who scarcely know how to address or consider him. He himself is probable eager to be ranked with men, and for this reason has long put away boyish things; but his seniors, somehow, are usually plaguily slow at perceiving that he has ceased to be a boy—so that, unless he puts forward some determined claim, he stands little chance of being accepted in the superior capacity. This, again, his bashfulness may forbid his doing, so that he is condemned to pine in secret under an injustice for which there is no immediate remedy.

If a youngster have elder brothers, who have for some time been received into the pale of manhood, his case is even worse. I have known desperate struggles take place between younger and elder brothers, in the assertion of a claim to be considered as an adult specimen of the genus *homo*. It is very shameful; but certainly the policy of the elder parties is decidedly of the keep-him-down character. Orlando, in *As You Like It*, is but a type of what all younger brothers have to endure from elder brothers. One may have got above anything like a particular affection for bread and butter for several months, yet those big fellows will still deny one's claim to manhood. One may have even begun to shave pretty regularly, though somewhat clandestinely, once-a-week; yet for some time it will all not do. Constant squabbling and fighting goes on—in

some instances for one or more years—before the point is finally settled.

A *toga virilis*, to be put on at a particular age, would save all these inconveniences. We have, indeed, a *toga virilis* in the long-tailed coat; but then there is no fixed time for enduing it. The difficulty with the young man is—to get his long-tailed coat. That would settle the matter at once; but then nobody will let him have it. Father, elder brothers, all who have any concern in the business, are found to labor under a remarkable prejudice about long-tailed coats, albeit wearing such garments most complacently themselves. The candidate is sure to be by far too young for it; in a year or two it may do very well; but it is absurd to speak of such a thing just now. It sometimes happens that, although a long-tailed coat is for the time unattainable, a pair of boots is not so; and the exchange of shoes for boots is a step toward the desired object. A sensible youth will be content to take his reform by instalments, trusting by-and-by to get the whole. And it is really remarkable how far even this alteration will go in advancing the youth to his proper character. One of a set of boys accustomed to play together, appears some fine spring morning with his organs of escape encased in boots. He is instantly recognised as having undergone some strange change, though they can not at first tell what it consists in. He is no longer the companion they had yesterday, but somehow has got quite above them. They approach with the hesitation due to his felt superiority, to see what it is that has changed him so suddenly, and ere long detect the boots; yet can not at first understand how those articles should have such an effect. The truth is, it is not the material boots upon his feet that make him look different; there is something within that passeth show. It is the boots of his mind that make the impress. He feels booted, and no longer is the boy he was. Were his actual boots quite concealed from view, he would still be the new man. The other fellows have a faint sense of how the case stands, and at once see that, unless they can get boots too, they must be content to strike under. Home, therefore, they go to their parents, and commence a process of agitation for boots—to every refusal replying, "Well, there's Harry Go-ahead has got boots, and he is no older than we," until they gain their point. This done, all is smooth for a time, but only till some one of the set takes another stride in advance—for instance, getting a stock in place of a black handkerchief, or a hat instead of a cap—when instantly the whole pack, as before, must struggle to get upon the same footing.

The getting of boots, stocks, hats, and such things, are but inferior stages in the career toward manhood. They are unmarked, unfelt, in comparison with the grand business of getting a long-tailed coat. There lies the real struggle of youth. The other things are outworks: the long-tailed coat is the citadel. I well remember that when I attained to boots, my ambition had scarcely yet conceived the idea of a long-tailed coat. One is modest at first, after the manner of Colonel Jack, of whom Defoe records: "About this time the colonel thought he might take it upon

him to wear a shirt." About the time when I got a hat, the vision of a long-tailed coat hung with considerable distinctness before my mental eyesight. I beheld the skirts dangling, and the yellow buttons gleaming, in one of those fits of *clairvoyance* which are only enjoyed in youth. Still the coat, like many equally important matters, long remained a matter of abstract speculation. I was sensible of its importance, for I saw how differently a lad in a jacket and one in a long-tailed coat were esteemed; but at the same time I knew that I was yet young and small, and without any proper pretensions to be so far advanced. At length, however, the time came when the long-tailed coat could be no longer dispensed with.

I and two juvenile and jacketed friends had for years been playfellows. We not only played together on all occasions, but had a regular alliance with regard to all matters offensive and defensive. As we grew up, we came to have a joint-stock collection of rabbits, from which we expected to derive an immense fortune; but this, like so many other joint-stock concerns, turned out a complete failure. Nothing occurred to mar the friendly feeling which subsisted between us, until one of my companions, who was a little taller and spoke somewhat louder than the rest, appeared before us one morning, to our no small astonishment, in a long-tailed coat. Our tall friend had cunningly kept the matter a secret evidently, as we thought, for the purpose of creating a sensation. I and my remaining jacketed friend were taken by surprise, and stood, perfectly awe-struck and abashed, peering from under our raised hands at our exalted companion. If he had exercised authority over us while he wore a jacket like ourselves, what would he not do now that he was arrayed in all the pride and plenitude of a long-tailed coat? We trembled at the anticipation, which only turned out to be too true. He of the long-tailed coat kept us in a state of perpetual helotism. There was a swell and a swagger in his air that nothing short of a long-tailed coat could have imparted. His voice waxed louder and more imperious. He dictated and dogmatized over us at his pleasure. We of course succumbed before him, for what could jackets do against a long-tailed coat? But were we to continue in that state for ever? That was the question. We had evidently arrived at a great crisis, and something must be done. My little jacketed friend and I did not say much on the subject, but our looks spoke volumes, and we knew that we felt as one. I may also remark that our long-tailed friend did not in so many words tell us that we were wretches in jackets, but his whole demeanor announced it as plainly as if he had spoken it. He first humbled us with an attempt at affability and condescension; then cooled off entirely. He was now joined to a set of youngers who wore regular long-tailed coats and smoked cigars. We were no longer fit company for him. Flesh and blood could not stand this unmoved, and in the first heat of our indignation we cogitated how we might manage to humble him in turn by cutting a skirt away from his coat. But this passed off. We came to see that it would be better for us to try to rise to his level, than to endeavor to pull him down to ours—a plan, by the way, which

may be recommended to the consideration of many older persons with curtailing doctrines. Not many weeks passed ere my sole remaining companion had succeeded in the great object. By some means, to me at the time inexplicable, he had contrived to nestle himself into a pea-green coat with marvellously long tails. I had scarcely recovered from the surprise which this gave me, when I saw him one day walking down the street arm in arm with the tall youth who had lately so shamefully entreated us both, and whom we, in our resentment, had vowed never again to speak to—no, upon no account whatever. Here was a specimen of human constancy! Matters were quickly enough decided. In less than a week, my late companion had completely deserted the party of the jackets, and was received as a full privileged member of the fraternity of the long-tailed coats.

I went home melancholy and misanthropical. Visions of a long-tailed coat, as already mentioned, had ere now visited me, but I was not eager on the subject: I could have waited meekly till time was ripe for the glory which I knew was ultimately to be mine. But when I saw myself thus cast forth as it were from my own proper society, on account of my wearing a jacket, it was no longer possible to exercise patience. It was now clear that if I did not get a long-tailed coat myself, and that speedily, I must fall back upon a set of boys below me in age and all other respects. Agitation had not then become a political principle, but was a recognised domestic one, and I lost no time in taking advantage of it. I spoke to my sister to speak to my mother to speak to my father to get me a long-tailed coat. Next evening, as the worthy man was reposing in his easy chair after dinner, quietly and unsuspectingly taking his usual tumbler of toddy, the trenches were opened by the deputed hand of my maternal parent, who, in the blandest tones, intimated that his son and heir had taken it into his head that he would like very much to have a long-tailed coat. The old gentleman flew into a violent passion, as old gentlemen are apt to do when their pockets are attacked. "A long-tailed coat!" he roared out in an old-commodore sort of way; "what does he want with a long-tailed coat? Nonsense, nonsense! If he gets a long-tailed coat ten years hence, it will be soon enough." I heard the words from behind the door, and my heart died within me. Not get a long-tailed coat for ten years! Was I to be doomed to wear a jacket, and be the laughing-stock of the whole long-tailed fraternity, for such a long time? Rather, I thought, let me die at once; and I really did for a moment contemplate suicide. But my mother, with whom I was a favorite, evidently appeared to be on my side, and I then saw reason for hope, knowing that she was in general a capital agitator. That very night, to my unspeakable joy, it was announced that "the governor" had relented, and that I might go and get measure taken for a long-tailed coat!

I immediately sallied forth and sought the dwelling of the tailor, at whose door I rapped in a bold determined manner. "Is Mr. Toggins at home?" said I,

in an authoritative tone. "Yes, sir;" and I was shown into a room. In a short time, Toggins appeared, with his measures disposed over his arm, and these he right quickly applied to my person. I remember yet the pleasure with which I felt his fingers touch the back of my leg as he measured me for the tails. I told him that I wished a first-rate article, and expected that he would spare no pains. He solemnly promised to do as I wished; and added, that to give the coat every advantage, he would put on a set of buttons of a pattern newly introduced in town, and which had only that day reached him. I left him with my head in the clouds. On Saturday night the coat was brought home. I tried it on; the fit was faultless, the workmanship beautiful, the buttons splendid. Next morning, when the bells began to ring for church, I walked forth in my coat, and proceeded with as unconcerned an air as possible up the sunny side of the street, which I adopted for the double purpose of showing off, and of seeing the shadow of my skirts on the wall. As I went along, one of a group of urchins upon whom I suddenly came, cried "Haud out o' the man's road!"—an evidence that I was no longer a boy, but a full-fledged man. The sentence, pronounced as it was in the broadest Scotch of a country town, was music to my ears, and inflated me as wind does a bag. I felt tall, and strong, and dignified, and not care-a-farthingishly, and went into church in a frame of mind anything but that of a sober Christian. On the following morning, it became evident that my coat had made a sensation. My former companions, who had stood aloof during the jacket regime, now came up, and were as frank and social as ever. I was inclined to be cold at first, but soon relented. The only punishment I inflicted was to report what I had been told by Toggins, but did not believe, that my buttons were the favorite buttons of the prince regent; at which, as I expected, they all looked rather blank. To tell the plain truth, I soon saw how absurd it would be to resent their former exclusive conduct; for, before we had walked along a hundred yards together, I felt the same contempt for one or two jacketed striplings of my acquaintance whom we met, as my new companions had lately expressed for me.

Thus happily, at length, ended the struggles of adolescence in my case; but I remain deeply sensible of how much better it would be to revive the Roman fashion, than to allow a youth to fight his way, as I had done, into the *toga virilis*—freely translated, the long-tailed coat.—*Edinb. Journal*.

FORGIVENESS.—The brave only know how to forgive; it is the most refined and generous pitch of virtue human nature can arrive at. Cowards have done good and kind actions—cowards have even fought, nay, sometimes conquered; but a coward never forgave: it is not in his nature; the power of doing it flows only from a strength and greatness of soul conscious of its own force and security, and above all the little temptations of resenting every fruitless attempt to interrupt its happiness.



Nazareth, with the Mount of Precipitation.

NAZARETH.

THIS view exhibits the village of Nazareth, together with the amphitheatre of mountains which rise majestically around it.

Here is shown the synagogue where our Saviour preached the sermon related in Luke iv. 18-27; and also the precipice, from which the monks of the Latin convent affirm that he leaped down, in order to escape the rage of his townsmen, who were offended at his application of the sacred text. "All they in the synagogue, when they heard these things, were filled with wrath, and rose up, and thrust him out of the city; and led him to the brow of the hill whereon their city was built, that they might cast him down headlong. But he, passing through the midst of them, went his way." (Luke iv. 28-30.)

The mount of Precipitation, as it is now called, is about a mile and a half distant from Nazareth, according to Dr. Richardson, but two miles according to the observations made by Mr. Buckingham and the Reverend W. Jowett; though Doctor E. D. Clarke maintains that the words of the evangelist explicitly prove the situation of the ancient city to have been precisely that which is occupied by the modern village. Mr. Jowett, however, has (we conceive) clearly shown that the Mount of Precipitation could not be immediately contiguous to Nazareth. This village, it will be observed, is situated in a little sloping vale or dell on the side, and nearly extends to the foot of a hill, which, though not very lofty, is rather steep and overhanging.

"The eye naturally wanders over its summit, in quest of some point from which it might probably be, that the men of this place endeavored to cast our Saviour down (Luke iv. 29); but in vain: no rock adapted to such an object appears.

"At the foot of the hill is a modest simple plain, surrounded by low hills, reaching in length nearly a mile; in breadth, near the city, a hundred and fifty yards; but farther on about four hundred yards. On

this plain there are a few olive-trees and fig-trees, sufficient, or rather scarcely sufficient, to make the spot picturesque. Then follows a ravine, which gradually grows deeper and narrower, till, after walking about another mile, you find yourself in an immense chasm with steep rocks on either side, whence you behold, as it were beneath your feet, and before you, the noble plain of Esdraelon. Nothing can be finer than the apparently immeasurable prospect of this plain, bounded to the south by the mountains of Samaria. The elevation of the hills on which the spectator stands in this ravine is very great; and the whole scene, when we saw it, was clothed in the most rich mountain-blue color that can be conceived. At this spot, on the right side of the ravine, is shown the rock to which the men of Nazareth are supposed to have conducted our Lord, for the purpose of throwing him down. With the Testament in our hands, we endeavored to examine the probabilities of the spot; and I confess there is nothing in it which excites a scruple of incredulity in my mind. The rock here is perpendicular for about fifty feet, down which space it would be easy to hurl a person who should be unawares brought to the summit; and his perishing would be a very certain consequence. That the spot might be at a considerable distance from the city is an idea not inconsistent with St. Luke's account for the expression "thrusting" Jesus "out of the city, and leading him to the brow of the hill on which their city was built," gives fair scope for imagining, that, in their rage and debate, the Nazarenes might without originally intending his murder, press upon him for a considerable distance after they had quitted the synagogue. The distance, as already noticed, from modern Nazareth to this spot, is scarcely two miles—a space which, in the fury of persecution, might soon be passed over. Or should this appear too considerable, it is by no means certain but that Nazareth may at that time have extended through the principal part of the plain, which lies before the modern town: in this case, the distance passed over

might not exceed a mile. It remains only to note the expression—"the brow of the hill, on which their city was built:" this, according to the modern aspect of the spot, would seem to be the hill north of the town, on the lower slope of which the town is built; but I apprehend the word "hill" to have in this, as it has in very many other passages of Scripture, a much larger sense; denoting sometimes a range of mountains, and in some instances a whole mountainous district. In all these cases the singular word "hill," "gebél," is used according to the idiom of the language of this country. Thus, "Gebél Carmyl," or Mount Carmel, is a range of mountains: "Gebél Libnân," or Mount Lebanon, is a mountainous district of more than fifty miles in length; "Gebél ez-Zeitûn," the Mount of Olives, is certainly a considerable tract of mountainous country. And thus any person, coming from Jerusalem and entering on the plain of Esdraelon, would, if asking the name of that bold line of mountains which bounds the north side of the plain, be informed that it was "Gebél Nâsra," the hill of Nazareth; though, in English, we should call them the mountains of Nazareth. Now the spot shown as illustrating Luke iv. 29, is, in fact, on the very brow of this lofty ridge of mountains; in comparison of which, the hill upon which the modern town is built is but a gentle eminence."

This intelligent traveller, therefore, concludes that this mountain may be the real scene where our Divine Prophet, Jesus, experienced so great a dishonor from the men of his own country and of his own kindred.

In a valley near Nazareth is a fountain which bears the name of the Virgin Mary, and where the women are seen passing to and fro with pitchers on their heads as in days of old. It is justly remarked that, if there be a spot throughout the Holy Land which was more particularly honored by the presence of Mary, we may consider this to be the place; because the situation of a copious spring is not liable to change, and because the custom of repairing thither to draw water has been continued among the female inhabitants of Nazareth from the earliest period of its history.

GEOLOGY.

In studying the science of geology, we have indubitable evidence of the successive development and destruction of different races of organized beings. This testimony is of a kind which might not, at first sight, strike the casual observer; but he who examines our rocks with a moderate degree of care, will frequently find them to be made up almost entirely of the shelly remains of organized beings and of corals, which have the general appearance of the present dwellers of the sea—in other words, which are easily proved to be either older or newer formations; he will find the remains of animals and vegetables of other forms, and so diversified that we must suppose them to have lived under very different circumstances. Between them we sometimes find layers of rocks, with no traces of organic matter,

from which we infer that a period existed during which the plants and animals could not survive. Several such epochs of the early history of our globe are clearly pointed out by the study of geology. At a comparatively recent period, large lizards were the most important inhabitants of the earth, and these with their associated tribes of plants and animals, in their turn disappeared to be followed by the elephant and mastodon, which were the races that preceded man, and all of which were destroyed by an occurrence which for a time, annihilated all life from the earth. To allude to the *glaciers* of the *ice-period*, an occurrence which has left visible traces on so many parts of the earth we are forced to the conclusion that the whole surface was once an immense glacier. This is a subject which has just begun to attract the attention of the scientific world, and to which Mr. Agassiz of Neufchatel has devoted a great deal of attention, studying the ruins of this immense *mer de glace* (sea of ice), upon the Alpine summits. Our present object is simply to give his account of a morning on these mountains.

The *ice-period*, he says, is the separating epoch between that denominated by geologists the *diluvial* and our own. It is this which, like a sharp sword, has divided all now existing organizations from their predecessors which lie buried in the sands of our plains, or beneath the ice of our polar regions. This it is, which has left behind, even to our day, the glaciers, as the witnesses of its former greatness, on the summits and in the elevated vales of our Alps.

If we go up to the southern heights of the Jura on a fine calm morning of spring or autumn, we often find a dense mist still covering the plains of the valley, while the life-giving sun sends down his beams from above, uninterrupted by cloud or vapor, and the sky looks out in its loveliest azure blue. The penetrating eye can discover naught in the deep below. A white mass of clouds, often of silvery whiteness in the beams of the sun, floats over the vales of Switzerland, beautiful with their smiling meadows, their laughing brooks, their flourishing towns and hamlets. Not even a gentle undulation of the surface reveals to the beholder, how easily removed is the veil, whose thick texture conceals from his eye the subjacent beauties. Over against him, however, the colossal Alps stretch away into the distance, glittering in their snowy drapery. Its contour stands out, bright and clear, in bold relief against the deep blue of the serene heavens, and its head just up on high, while its foot is all enveloped by the impenetrable veil of mist, which conceals the busy bustle of men beneath. So peculiar is the impression of this scene, which exhibits Nature to us so entirely in her simple majesty; so strangely is the susceptible soul affected by this view, where there is no sign of that life which everywhere else leaves its traces around us, that every one who for the first time has enjoyed the vision, will lay it up among the most delightful of his memories. Such, I think—if it is allowable to compare so limited a scene with the immeasurable,—may have been the appearance of the earth, when, at the ice-period, a congealed crust of snow enveloped its surface.



ORIENTAL WATER-CARRIER.

In oriental towns, water is not conveyed to the several streets and houses by pipes or trenches. It must all be brought from the river or the wells. In towns, this is seldom done by the householders themselves, or by their servants. There are men who make it a trade to supply every day, to regular customers, the quantity of water required. This they carry about in a well prepared goat-skin, which is slung to the back in the manner represented in our cut, the neck, which is usually brought under the arm and compressed by the hand, serving as the mouth of this curious, but exceedingly useful vessel. Persons of larger dealings have an ass which carries two skins at once, borne like panniers: and we have known very prosperous water-carriers who had ox-skins carried on a horse. These men, continually passing to and fro with their wet bags through the narrow streets, are great nuisances in the towns, from the difficulty of avoiding contact with them. The care taken to avoid them, in some degree answers to that which people exhibit in our own streets to avoid carriages and carts. There are no draught vehicles in Asiatic towns; and the water-carriers with their bags, together with the "hewers of wood," bearing large faggots on their own backs or the backs of horses or mules, form the only obstructions which usually occur in the streets, narrow as they are. In a time of public calamity the water-carriers are the last to discontinue their labor; and their doing so is a sure indication that the distress has become most intense and imminent, and is indeed a great calamity in itself.

ANCIENT WORLD.

THE ancient world was only a little world. Although warlike, it derives its chief glory from the works of

genius, from the writings of poets, historians, and philosophers. Viewed through this glowing but exaggerated medium, that looks great and magnificent which in reality was stunted, meager, and desolate. Alexander vainly thought he had conquered the universe when he had only ravaged a district. Nations were then only tribes, empires cantons, and their half-savage rulers hardly more potent than emirs of Lebanon or khans of Tartary. Most of what now constitutes the earth, and fills it, was unknown; the great seas and continents were hid below the horizon of the ancients; even the swell of an ocean-tide had scarcely been felt by them; and all their conquests, battles, and bustle—the sites of their great cities and kingdoms, as well as of their histories and epic poems—never ranged far from the tranquil shores and islets of the Mediterranean lake.

The number of people corresponded to their narrow geographical limits. How, indeed, could mankind be numerous without the means of sustenance, when there was little commerce, and no manufactures; when they were strangers to the useful arts, by which a dense population can alone be fed, clothed, and lodged? All, therefore, which has been transmitted as to the extreme populousness of the ancient world, may be considered almost as deceptive as its oracles. Carthage, according to Strabo, contained 700,000 inhabitants; Athens, inclusive of slaves, about half a million; Rome, four millions. It is not improbable that in these representations there is a wrong figure or a redundant one. Statements of numbers are very liable to errors, and the errors to be copied or multiplied, as the grammatical construction does not detect them. Besides, it must be remembered of Athens and Rome, that, though termed cities, they were more properly districts or provinces walled in. The present remains of the Roman walls show that they were of vast extent; but they encompassed large tracts of country, were truly *rus in urbe*, and included in their circuit woods and water, and corn-fields, as well as mansions and spacious gardens. And Rome, as is well known, comprised the chief of Italy. Genoa, Milan, Florence, Leghorn, and other noble cities, are of recent foundation, and pertain entirely to modern history. Italy, even in the Augustan age, must have been thinly peopled, and doubtless afforded a free passage enough for those vast herds of swine (one thousand in number) of which Polybius writes, and which were guided in their pastoral migrations by the blowing of horns. The severity of the climate in the most busy regions of the Old World attests the scantiness of population. In Ovid's time, the Black sea was often frozen, which would be quite a phenomenon at present. That Italy is warmer now than formerly, we have many testimonies. From various passages of Horace, we may suppose that the streets of Rome were full of snow; and Juvenal refers to a woman breaking the ice of the Tiber to perform her ablution. I never met with a tourist who had seen snow in Rome; and the Tiber is hardly more liable to freeze than the Nile or Ganges. This increase of temperature is satisfactory proof of an increase of people; for numbers tend much to the civilization of climates, as of manners and institutions.



View of London from the York Column.

A CONCISE ACCOUNT OF LONDON, FROM ITS ORIGIN TO THE PRESENT TIME.

LONDON, the vast and splendid metropolis of England, the capital of all the British dominions, and the most renowned city in the whole world, not only for the numbers and wealth of its inhabitants, but their industry, bravery, humanity, and unconquerable love of liberty; its extended commerce to all parts of the globe; its successful polity, its useful and dignified establishments of learning, as well as trade, and its unrivalled manufactures, its numerous hospitals for the sick, asylums for the orphan, receptacles for the blind, and the various institutions for reforming the abandoned, and succoring the decayed—form together such a grand and enlivened picture of a people, whose benevolence and acts of charity are so enlarged and ennobled, that the pen must fail in doing justice to the exalted traits of character which abound in this first of cities.

The origin of this celebrated city is involved in great obscurity; some historians asserting that it was a British town before the arrival of the Romans, and others, that it was founded by them, and denominated *Colonia Augusta*, or *Londinium*. Be this as it may, its advantageous situation for trade soon drew to it a considerable number of merchants, and it became a populous and wealthy mart for the productions of most parts of the world.

London is first mentioned as a Roman settlement in the reign of Nero, A. D. 61, when it was the residence of a great many merchants and dealers. Long before their taking possession of it, however, it was a village of the Belgic Britons, who were a

mixed race of Gauls and Germans, but more German than Gaelic. It was built in a wood, fortified with ramparts and ditches, and hence its name, *Lund*, or the Wood, and *Lunduyn*, the fortified wood, or hill. It is indebted to no splendid origin or adventitious aid, except being the seat of government, but has risen to its present grandeur and opulency by its intrinsic merits, the advantages of its situation, and the industry and commercial spirit of its inhabitants. The Romans soon discovered its convenient situation for a military station, and established a magazine of stores and provisions there, A. D. 51.

The first notice of London as a place of commercial importance, occurs in the annals of Tacitus, who speaks of it as the noble emporium of his time, the great resort of merchants, and famous for its social intercourse, though not a colony.

Too great security, however, proved its temporary ruin, for its inhabitants having neglected to enclose it with fortifications, it was easily taken by the numerous, though undisciplined forces of Boadicea, A. D. 64; when the greater part of it was burnt, and the inhabitants massacred.

After the defeat of this heroine by the Roman forces, the city arose from its ashes, and, in the reign of the emperor Severus, had so increased as to obtain the denomination of the "*great and wealthy city*;" yet, although warned by its former wretched fate, no measures were taken for its security until more than a century afterward, in the time of Constantine the Great, when it was enclosed with a wall of stone and brick. This wall was upward of three miles in extent, and was defended on the land side by fifteen towers, some of which remained until within a short period. It

had four gates, corresponding with the great military roads.

Very little is known of London from the departure of the Romans until the consolidation of the kingdoms of the heptarchy into one under Egbert, when it became, and has ever since continued, the metropolis of England. In the interval it had greatly increased in extent and wealth, commerce having for many ages been successfully carried on. But its prosperity exposed it once more to devastation and ruin; the Danes, attracted by its wealth and almost defenceless state, sailed up the Thames with a powerful fleet, and again the streets of this proud city were stained with the blood of its inhabitants, and nearly all its buildings reduced to ashes. Two years after they returned to finish the work of destruction, and to carry off whatever might have escaped their hands on their former visit; but, happily, their wicked designs were defeated, and their forces nearly cut to pieces by the brave Ethelwolf and his son Ethelbald.

These desperate marauders, however, again renewed their predatory incursions, and some even settled there when the city had once more recovered, in some degree, from its disasters.

On the accession of Alfred to the crown, he turned his attention to the enlargement and improvement of London; and that no treacherous enemy within might aid an invader from without, he drove out the Danes, rebuilt the walls, and adopted many wise measures for the security and embellishment of the city.

Yet we must form our ideas of London as it existed in the reigns of the early kings from the scene it now presents to our view, instead of stately palaces, elegant churches, spacious squares, and regular streets, of lofty and commodious houses extending over an immense surface, displaying the wealth collected from all parts of the globe, and thronged with splendid equipages, we must figure to ourselves narrow, crooked, and unpaved lanes, of lowly cottages constructed chiefly of timber, and covered with thatch.

True it is, this description may seem to differ with the accounts left by earlier historians of its grandeur and beauty; but we must bear in mind, that things are great or little by comparison. Contrasted with the rude huts and the hovels of their Saxon successors, scattered over the country, the timber edifices of London wore an air of superiority that justified the then opinion; but if brought in competition with London in the present day, how vast the disparity; its former beauty was but deformity, its grandeur insignificance.

The materials of which most of the buildings of London were constructed contributed greatly to the calamities, although no less to the ultimate advantage of the city. Frequent fires occurred, which, meeting with little to check and much to accelerate their progress, made great ravages. Distressing, however, as these events were to those whose property was consumed, or whose relatives or friends had fallen a prey to the devouring element, they proved public benefits, by affording opportunities for rebuilding in a more commodious manner, and in a

better style of architecture. Accordingly they produced this effect, though very slowly; and it was not till after the great fire of 1666, that London at all approximated to its present convenience, regularity, and beauty.

The first calamity on record of this kind of any importance, occurred in the year 1077, in the reign of William the Conqueror, which laid nearly the whole city in ashes.

Scarcely had it recovered from this visitation, than it experienced the ravages of another fire in 1086, which not only destroyed the best and most opulent part, but consumed likewise the cathedral of St. Paul's. By the munificence of the king, however, and the contributions of the pious, this sacred edifice was rebuilt much more magnificently than before.

From this time, through a long series of years, London experienced great vicissitudes; sometimes highly favored, and at others dreadfully oppressed by its monarchs and men in power. Weak and needy princes frequently extorted large sums of money from the citizens to supply their extravagance, while prudent and wise sovereigns endeavored to promote the prosperity of the metropolis, well aware, not only that their own depended much on the love and esteem of their subjects, but that the welfare of the whole kingdom was intimately connected with that of its capital.

Yet, notwithstanding the frequent improvements made in this city after every destructive fire, it still continued so confined and dirty as to be a very insalubrious residence; diseases frequently made great ravages among the inhabitants; the most celebrated instance of which occurred in 1665, in the reign of Charles II. About the close of 1664 two or three persons died of the plague in Westminster, which caused great alarm; but, as nothing further of importance occurred during the winter, this alarm gradually subsided. In the spring, however, it began to reappear, and as the warmth of the weather increased, its virulence increased in proportion. In July, August, and September, its fury was at the height, and it is calculated that 68,590 persons fell victims to it in London alone. The city was nearly deserted, and grass grew in its streets. Scarcely a sound was to be heard in its once busy haunts except the rumbling of the carts destined to convey the bodies to the receptacles provided for them, and the melancholy cry of their drivers "*Bring out your dead.*" The approach of winter checked its progress, until it gradually disappeared as the cold increased.

In a short time almost all traces of this terrible desolation were obliterated, by great accessions of inhabitants from the country, when another calamity took place almost unparalleled in the history of the world, for the extent and magnitude of the loss, and yet ultimately, one of the greatest blessing this celebrated city could possibly have experienced. This was a tremendous fire which broke out September 2, 1666, and continued raging with great fury for five days, presenting one vast conflagration of many miles in extent, the flames and smoke of which seemed to soar to the clouds, and cast a lurid light on objects around to a great distance.

The fire is said to have commenced in a baker's shop in Pudding-lane, near East Cheap, and after burning the time above mentioned, it was stopped at Pie corner, Smithfield. Notwithstanding the great extent of this dreadful fire, it is believed not more than eight or ten persons perished in the conflagration, but the destruction of property was immense, and computed at nearly eight-millions sterling. London before the great fire was remarkably unhealthy, owing principally, it is supposed to the narrowness of the streets, and the very great projections of the houses at that time; inasmuch, that the air was confined too long, and added to its not having a good supply of water, occasioned so frequently those pestilential vapors which produced the plague and other dreadful diseases, so terrible in their consequences, and prejudicial to the health of the inhabitants.

To this terrible visitation the magnificent cathedral of St. Paul's fell a sacrifice, above 100 churches, many palaces and public buildings, and more than 13,200 houses. The loss of property in furniture, merchandise, &c., was immense, and it seemed almost beyond human power to repair the ravages of this terrible scourge. Yet in a comparatively short time, the city rose like a phoenix from its ashes, more elegant and splendid than before; the houses were built more spacious and convenient, the streets wider, more regular, and airy, the public edifices in a more chaste and refined style of architecture, and the high-ways were rendered more commodious by a pavement of granite. Yet, though London thus assumed an appearance infinitely superior to anything it could boast before this awful visitation of Providence, and in consequence the health and comfort of its citizens were proportionally improved, its moral and political condition was dreadfully deteriorated; from the extravagance that reigned at court, greater supplies of money were continually needed than could be provided in the regular way ordained by parliament, and in consequence, arbitrary exactions on the city of London were had recourse to, and its privileges invaded in the most tyrannical manner, if they were not readily complied with. The arbitrary measures of the court were at length carried to a greater length than could be endured. The revolution ensued, and London regained all her rights and privileges, which she has retained without molestation ever since.

London is admirably situated as it respects the salubrity of the city; the ground rises gently from the river Thames, thus affording an opportunity for carrying off its superfluous waters and filth by means of sewers into the common receptacle. The soil likewise is gravelly, excepting on the south side of the river, where it has been greatly improved by draining. Including the out-parishes London is above 30 miles in circuit. However greatly it was improved in the disposition of its streets and the convenience of its buildings after the great fire, it could not compete with many of the great capitals of Europe in magnificence and beauty. It possessed several edifices which did credit to the national taste and magnificence, but their effect was destroyed either by the badness of the approaches, or by the buildings which

surrounded them. The royal palaces were inferior in grandeur to many of the residences of the nobility; and some of the public offices were inconvenient, and far from being ornaments to the city. But during the reign of George IV., London rapidly approximated in beauty to the most splendid cities in the world. A palace well worthy the residence of the monarch of the British empire occupies the site of the plain brick building, once the favorite residence of George III. A triumphal arch of exquisite proportions forms the approach to it, while opposite is a plainer, but not less beautiful entrance to Hyde Park.

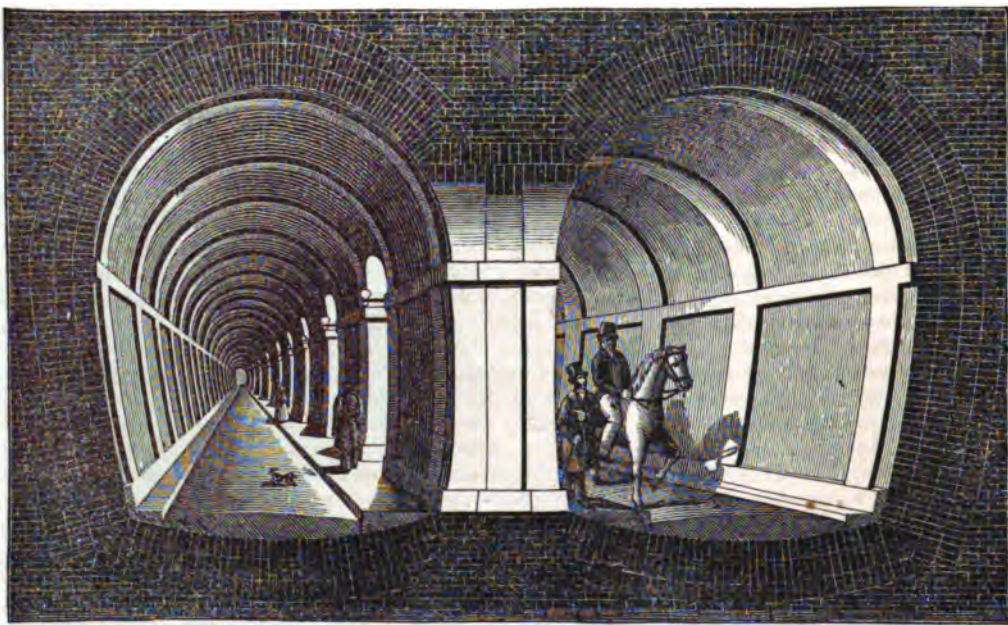
Emulous of following the example of their sovereign, many opulent noblemen have since expended vast sums in erecting new, or altering their old mansions in the most costly style. Whole streets of grand spacious mansions have been constructed, chiefly occupied by tradesmen of the highest class, whose valuable wares make a splendid show, and give a vast idea of the wealth and refinement of this wonderful city.

Among the more recently-erected public offices, which are truly ornamental, may be named the national gallery, the treasury, the postoffice, the customhouse, the mint, &c. But the exquisitely beautiful Regent's park, with its majestic coliseum, its rows of palaces, its zoological gardens, its diorama, and many other interesting structures, must not be forgotten, nor those stupendous works of art, the new docks, the new bridges, the tunnel under the Thames, a vast work, which has lately been completed to the great honor of the British empire, and the advantage of its metropolis. Not to mention the magnificent pile now constructing for the new houses of parliament, and the new royal exchange, both of which will be of unsurpassed excellence and splendor, it is impossible in so brief a notice of the "Great Metropolis" to particularize.

Among its ecclesiastical edifices we can only mention its two great leading objects of interest—Westminster abbey and St. Paul's cathedral; the former founded by the Saxons in 610, a magnificent gothic structure, which, with its adjoining chapel built by Henry VII.—styled by Leland the wonder of the world—may be considered a vast mausoleum of the departed greatness and splendor of England, containing, as it does, the shrines of a long line of kings, statesmen, heroes, poets, and men of science; the other as a Christian temple, inferior to none in Europe except St. Peter's at Rome; its extreme height being 340 feet, while its circumference is 2,292 feet. There are also several hundred other religious edifices which intersect the metropolis, some of which are of great architectural beauty. The Tower, recently destroyed by fire, was an object of the highest historical interest—but we must proceed.

The irregular form of London makes it difficult to ascertain its extent. Its length, from east to west, is about ten miles; and its breadth, from north to south, is five miles. Its circumference, as before observed, is over thirty miles.

London, in its most extensive sense, comprises the



Thames Tunnel.

metropolis properly so called, the city of Westminster, the boroughs of Southwark, Lambeth, Mary-le-bonne, Finsbury, and the Tower Hamlets, together with a part of Middlesex; but though all these are included under one general name, they have each its separate and proper government.

London may be said to be divided into three grand distinctions, of which the manners, taste, and appearance, speak for themselves, and are wholly different, independent of a variety of minor subdivisions. The West End of the town as it is usually called, is principally devoted to the residences of the nobility and gentry, and many of whom, may truly be said, from their magnificence, to be princely. Fashion, elegance, and splendor, dazzle the eyes of the spectator; and the throng of equipages of the most exquisite taste and workmanship, which are continually seen in this part, display such an abundance of wealth, as to create the most lively and interesting astonishment.

The city of London, from its great bustle and activity in trade and commerce, and the hurry which seems to pervade each person in the streets to prosecute his business, makes a strong impression upon the mind of the stranger, particularly if chance directs him to view the various departments of the Bank, the amazing concerns of which employ nearly a thousand persons; or, in walking round the Royal Exchange, where he may hear all the languages of Europe spoken, and give him some idea of the intercourse which exists between England and foreign nations, and of the great and extensive commerce of this mighty country. It is pleasing to observe the ease and facility with which business is transacted upon this little spot, by natives from all parts of the globe; and here the importance and integrity of the British merchants' character stands unrivalled, sur-

rounded by groups of Frenchmen, Germans, Dutch, Danes, Swedes, Spaniards, Portuguese, Jews, &c., respected and admired by them all. The surprising trade of the East India Company, by whom thousands of men are daily employed; the numerous banking and merchants' houses, besides the other public establishments which adorn this ancient city; added to that grand emporium of commerce, the customhouse, whose vast exports and imports are far beyond those of any other country in the world.

The East End forms a scene so interesting in itself, that our present brief sketch would be incomplete without an allusion to it. True, the manners of the inhabitants of Wapping, by their immediate intercourse with the hardy and unsophisticated sons of Neptune, the tars of Old England (whose principal residence when on shore, is in this part of London), become a subject for comparison between the genteel, industrious, well-informed citizen, and the finished gentlemen of the west end of the town, and the contrast must prove a fine one. The light and shade upon the canvass are strong and imposing; and the various tints and hues exhibited throughout its various parts, give such a strength and harmony to the whole, that renders the excellence of the subject a masterpiece of composition.

The peer and the gentleman, in contemplating the claims of the sailor, exhibit their respect and gratitude to his exertions as the *main-stay* of the country; the merchant hails him as the source whence his wealth is derived and secured; and the people, in the aggregate, by whom the true courage and humanity of the English nation is preserved, and so much admired. The merchants and tradesmen form a most interesting group in society, by their exertions and enterprise in promoting the manufactures of their native land, and procuring employment for hundreds

of thousands of their countrymen and furthering the riches of the state, enriched by the integrity of disposition, and liberality of conduct. The multitudes of distinguished citizens, the myriads of ingenious mechanics, and the universal display of industry in the minor ranks of the population, exhibit such a combination of talent, intellect, and strength, as never can be diminished, while the life of the lowest is as much under the protection of the law, as that of the highest subject in the kingdom; whose rights and privileges can not be trampled upon with impunity; and who, together, form the links of one grand, correspondent, and indissoluble chain, that must ever bind them in union, like the bees of one hive, so naturally and emphatically described in the words of the immortal bard:—

"So work the honey-bees;
Creatures, that by a ruling nature teach
The art of order to a peopled kingdom;
They have a king and officers of state,
Where some, like magistrates, correct at home;
Others, like merchants, venture trade abroad;
Others, like soldiers, armed in their stings,
Make boot upon the summer's velvet buds;
Which pillage they with merry march bring home
To the tent royal of their emperor;
Who, buried in his majesty, surveys
The singing mason, building roofs of gold;
The civil citizens hoarding up the honey;
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate;
The sad-eyed justice, with his surly hum,
Delivering o'er to executors pale,
The lazy, yawning, drone."

In describing the two other divisions of the metropolis, the west end must undoubtedly prove a dazzling species of attraction, and operates strongly upon the senses, by the riches and grandeur which present themselves to public view; the stately mansions of the peers, the interior of whose houses, in many instances, vie with palaces; the noble residences of the senators, and the elegant habitations of the gentry and merchants, at whose tables the luxuries from all parts of the world are seen and enjoyed: the solidity, integrity, and immense transactions carried on in the city—interests by comparison, impresses by its sterling importance, and consolidates by its almost inexhaustible stores of merchandise, wealth, and private property, where there are individuals richer than dukes; but in viewing the east end the feelings are enriched with honest pride and laudable ambition, in beholding the very source from which the two other parts of the metropolis receive their support.

A person viewing London, and unaccustomed to the sight, can not behold without surprise the vast number of boats and barges, both of pleasure and burden, above London bridge, continually passing and repassing, for the convenience and supply of this city, and the towns on the banks of the Thames; nor is it possible to observe without astonishment the vast fleets which constantly appear below bridge, carrying away its manufactures in exchange for the produce of the whole earth.

London may challenge all the world for the accommodation it offers to all ranks and degrees of people, and in no place can money be laid out to so much advantage, either in articles of luxury, necessity, nature, or of art. Its numerous markets may

challenge competition, where the necessaries of life are to be purchased at a much cheaper rate than on the spot whence they were grown and reared, the supplies are so very abundant.

The principal distinguished streets of this great metropolis for retail trade, assume an aspect of wealth and dazzling splendor, that is truly surprising. The interior of many of the shops display a profusion of taste and elegance which can scarcely be credited, and the articles exposed for sale, in general, are of the most finished and unrivalled workmanship.

In contemplating the vast extent of the metropolis, the candid observer, in justly appreciating the various degrees of comparison that must unavoidably attach to such a phalanx of human beings, some caution is necessary to prevent our being hurried away by the fascinating glare on the one part of the inhabitants by their riches, grandeur, and exemplary conduct in society; nor prejudiced too strongly against the other, from the lamentable catalogue of human depravity exhibited in London; more especially, when it is recollected that it is not only the grand dépôt of England, but a general receptacle from almost every other country, independent of the vast accumulation from all parts of the British nation, of the idle, depraved, and dishonest—the very centre of temptation and resources for destructive pleasures, gambling, depredation, and fraud, as well as being distinguished for its honest industry, far exceeding every other situation; its numerous amusements, the mirror of fashion, extravagance, dissipation, and folly, opening an unbounded field for the exercise of the talents of the patriot, the virtues of the philanthropist, and the moral and pious duties of the religionist; operating by their powerful examples in extending the love of country, improving its prosperity, and establishing its fame on the sound and unalterable basis of principle, morality, and good order.

Oh, London, London! what a school art thou for unguarded innocence and unprotected youth; great, splendid, mighty, though thou art. Recollect, ye who would live beyond the beasts that perish, that this emporium of wealth, this nursing mother of enterprise and industry, this battle-field of fortune and of fame, is at the same time but too often found the grave of virtue, principle, and honor—of trusting kindness and amiability of heart; recollect this, and be satisfied with innocence and obscurity. If you could penetrate our hearts, and find the universal leprosy that taints us there, you would turn disgusted from the appalling sight; you would fly the place where all that man has in common with the angels, must give way before the selfish worship of mammon, our god; you would return to the enjoyment of those luxuries of life which have nothing in common with fortune or fame—the sweet society of friends, the rapture of confiding love, and the solace of a cheerful and contented mind.

Happy, thrice happy, are they who have not listened to the voice of the charmer, or cast their lot amid the turbulence of mighty cities; creation's heirs. The earth is to them a goodly heritage, the little flower that lurks half hidden from the eye, is a familiar

friend. Cheerful are your smiles, children of nature, for your hearts are innocent and pure; light your slumbers, unbroken by the disappointments of the day, or the cares of the coming morrow; uncorrupted by the vices of the town, your ignorance is truly bliss. While we are absorbed in the vanity, that is, business of life, you pursue more wisely its enjoyments; while with us soul and body are absorbed in striving for the emptiness of a name, or the incumbrances of fortune, you are blessed in the pursuit of another and a better ambition—the ambition to live, not greatly, nor wealthily, but which is worth all—of living *well*.

DO WE NOT BOAST TOO MUCH, OR, MORE THAN IS USEFUL?

It is well, both in individuals and societies, to cherish feelings of self-respect; to feel that there is an ability to accomplish something useful and praiseworthy; and even to claim a right to express an opinion as well as the rest of the world. We may justly estimate our privileges and our means of improvement; and stand forth in defence of the favored civil and social condition allotted us. But do we not boast too much? Are we aware of the privileges and blessings enjoyed in our *father-land*, and in some other parts of Europe? Are we ignorant of the far greater advantages and improvements of some other portions of mankind? By reading some of the publications in the United States, one would conclude that we thought wisdom and knowledge were peculiar to our country, and that all former generations were sunk in ignorance and barbarism. But what candid and well-informed man will pretend, that in learning and in scholarship, in philosophy, and in the physical sciences, we are not far behind England, Scotland, France, and Germany? In refinement of manners, too, and in courtesy, we can not but believe that in many respects Europeans are our superiors. If fairly tested, we fear the balance would be against us. That the common and lower classes of our people have greater advantages than in other countries, is readily admitted, with feelings of pride and gratitude. But the boast often is that most individuals have more learning, and are better informed than any men of the last or any former generations; and that within twenty years in this country, there has been a great stride in the march of mind. But all this is more easily said than proved: and, as to manners and deportment, those of the old school, we think, have been given up, for what is called more republican and independent, without any advantages on the score of courtesy, or for the promotion of urbanity and politeness. And what is the *benefit* of boasting, even if we might do it with truth? It is of no advantage as to the improvement or temper of an individual, but the reverse. For it renders one self-sufficient and vain; and when he is ready to *claim* even what he merits, it creates a reluctance in others to acknowledge it. Such a trait of character is far from being conciliating, if it

is not directly repulsive and offensive. Nor is it less unfavorable to self-improvement. Such a person, being already perfect in his own estimation, has no motive for becoming wiser or better. By boasting, we in effect say to others, we are your superiors, we neither ask your friendship nor seek for your esteem. A modest and really worthy and well-informed man never declares by words or actions, "I am as good as I wish to be, or as the rest of the world;" but rather, "I desire to learn and to improve; I meet with others of more learning and virtue than I can claim to possess; and I would not repulse them by assumption, nor offend them by arrogance: I would excite their good feelings, and collect from them some advice I need, and some knowledge of books or of men, of which I am now ignorant." All this is quite consistent with due self-esteem, and with resisting the claims of the forward and superficial by dignified reserve. A man may be courteous without stooping, and unassuming without meanness. The apostolic advice is worthy of remembrance, "Not to think more highly of ourselves than we ought to think;" still more the admonition of the Savior; "He that exalteth himself shall be abased; but he who humbleth himself shall be exalted."

OBSCURE PASSAGES IN THE BIBLE

A GENTLEMAN who visits with great regularity the Philadelphia penitentiary, the inmates of which his piety prompts him to instruct, had given a Bible to a convict, who would ask him at each visit, with much shrewdness, some difficult question formed from passages of the sacred volume; each time declaring he would not go on if this was not explained to him. The gentleman was unable to persuade him that it would be best for him first to dwell upon those passages which he could easily understand, and which plainly applied to his situation. After many fruitless trials to induce the convict to this course, his friendly teacher said: "What would you think of a very hungry man who had not eaten a morsel of food for the last twenty-four hours, and was asked by a charitable man to come in and sit down at a richly covered table, on which were large dishes of choice meat, and also covered ones, the contents of which the hungry man did not know. Instead of satisfying his exhausted body with the former, he raises one cover after another, and insists on finding out what these unknown dishes are composed of. In spite of all the advice of the charitable man to partake first of the more substantial dishes, he dwells with obstinate inquiry on nicer compounds until overcome with exhaustion, he drops down. What do you think of such a man?" "He is a fool," said the convict, "and I will be one no longer; I understand you well."

A BRILLIANT THOUGHT FROM A DARK HEAD.—A few days since in Jersey a man of color, on being apprized by his employer that he began to exhibit the silver tokens of age, replied in the following beautiful burst of natural poetry, "'Es, massa, dis nigger blossoming for de grave!"



SIDON.

BY JOHN CARNE, ESQ.

NEAR to Sidon begin the precincts of the Holy Land, and of that part in particular which was allotted unto Asher, the borders of which tribe extended to Carmel. In ancient times this city often awakened the jealousy of Tyre by her wealth and commerce, which she owed to the great convenience of her harbor, rendered capable by art and skill of containing a great number of vessels. The Christians lost this city in the year 1111; they afterward retook it from the Saracens, and St. Louis repaired it in 1250; but the Saracens rendered themselves masters of it a second time in 1289, and the celebrated Emir Facardine destroyed the harbor, to keep his enemies, the Turks, at a distance. This prince, who had passed some time in Italy, had imbibed a taste for the sciences and fine arts, and returned to his native land with a highly cultivated mind, and a passionate desire to improve his countrymen. Brave and enterprising, he conquered the greater part of Syria, and built several palaces, after the models he had seen in Italy; the ruins of one still exist in the neighborhood of Beirut. He was assassinated, while yet in the prime of life, by one of the Druses of Lebanon, and all his plans for improvement perished with him.

The appearance of Sidon, as you approach it from Tyre, is beautiful; with its gardens of orange and apricot trees, its gray walls, and an air of tranquillity and fruitfulness, which is the more striking after the decayed, dejected, and melancholy appearance of Tyre. Its plain is about two miles wide: a high hill rises about a mile from the town, in whose rocks several sepulchral grotts are hewn. At about two thirds of

the way from Tyre to Sidon, we were invited to stop at a little hamlet consisting of a few poor cottages, at one of which coffee was sold: the heat of the way was great,—it was noon, and there was no shadow of trees, not even “of a great rock in a weary land.” It is necessary, to be a traveller in the East, to estimate the deliciousness of a cup of coffee put to the lips at such an hour; for it is meat and drink, and bread and wine. The sea fell with a low murmur on the waste and desolate beach, and not the form of a single cloud rested on the bosom of the plain.

But this spot had higher claims to interest, being the site of the ancient Sarepta, where Elijah in the time of famine, was fed by the widow’s cruse of oil. The ruins of dwellings, very ancient, are scattered around: the scene is in a little valley opening on the sea; but the brook that fed the prophet is now dry, and, like that of the valley of Elah, whence David took the pebbles to smite the Philistine, there is no moisture in its sandy and stony bed. Yet the scene is one to which the great messenger of his God might have loved to retire. High hills rise on each side, from whose wild summits and verdant sides rise masses of gray rock, and the shepherd is seen watching his flock, and the wild tunes of the Syrian pipe are heard from afar. The bold promontory of Tyre is seen in the distance on the left, and far on the right are the snowy summits of Lebanon towering to the sky; and beneath them the rich and ancient groves of cedar, and cypress, and sycamore. This little vale of Sarepta is a wild and impressive solitude: how beautiful and interesting a book might be written of the wanderings of the great and hallowed characters of scripture in the desert and the plain, in the mountain and valley; of their exile and their many mercies, of their indelible hopes and remembrances!

Solitude was their bosom friend and companion; they held communion with nature in her gloomiest as well as most glorious retreats, and in all her aspects they saw the finger of her God. The poor Arab who sold this coffee could depend only on the custom of the chance passenger or the wanderer; it was seldom the enthusiast passed his door. It was seldom that the memories of ancient and holier times found a responsive chord in the bosom of the native. Who is there in the land, that cares for the gray rocks and ruinous places of Sarepta? Who is there, that weeps beside the hushed stream or the silent homes? The queen of the wilderness sits on the ground, "there is none to comfort her, or to listen to the voice of her mourning." How different from the times of old, when Jacob said, "his border shall be unto Sidon. Out of Asher his bread shall be fat, and he shall yield royal dainties. The blessings of heaven above, and the deep that lieth under, even to the utmost bounds of the everlasting hills."

It was evening when we entered the gates of Sidon, wearied with a long ride of twenty-five miles; the weather was beautiful, but there was not a breeze even from the sea. After the flat and sandy beach over which we had lately rode, it was grateful to pass through the rich gardens that extend half a mile beyond the walls of Sidon. There was no caravansera in the town, no roof of a friend to welcome us; we had no letter of introduction, as was sometimes the case, to the wealthy or the powerful. We took up our abode in some waste apartments belonging to the French consul, with naked walls and floor. The traveller here, as throughout the East, must bring his own utensils and bedding with him; but fatigue and novelty sweeten all things. Yet it was somewhat melancholy to look round, and see no preparations for a repast after a long and dinnerless day; our mattresses were placed against the wall; even the pan of charcoal, that now would have been welcome, was missing; for the night breeze from the sea began to come chill through the long vaulted passages and broken casements. In the evening we paid a visit to a merchant's family of Sidon: the contrast was vivid and delightful; we sat on soft carpets and cushions, the pipe and coffee were presented to us, and some light Oriental dishes with some excellent wine were soon served. The lady of the house, a pretty woman and well dressed, presided at the supper, and the conversation was easy and agreeable. She assured us she had made one or two of the sweet dishes with her own hands. The experience of this evening made me resolve, wherever I went in future, to seek the dwelling, whether poor or rich, of the native, rather than the walls of the monastery or the khan. In Jerusalem, I had good reason to applaud this decision, being lodged in the house of a native near the gate of Bethlehem: my apartment opened on the battlements of the strong and ancient wall, at a short distance from the tower of David: they served my repasts every day on a little table about a foot and a half high; fresh cream and honey, bread and coffee, for breakfast; the wine of Jerusalem, which Chateaubriand calls excellent, at dinner; and in the evening the family assembled, and sang some

native air to the sound of the guitar. From this calm and pleasant retreat, that had quite a feeling of home about it, I was seduced by the persuasions of the superior and monks of St. Salvador, who gave me in exchange a small and wretched cell paved with stone, a chair, and a table; a chill and damp air, for the light dimly struggled through a low and grated window. At sunset the gate of the monastery was always shut, and the captive in his dungeon did not look forth with more desire on the mountain and stream, than did the traveller, as he paced the gloomy passages and halls, look on the ruinous and memorable places of the city, where it was so sweet to wander in the freshness of the evening.

On the following morning we walked on the shore, a pleasant and healthy promenade in front of the ancient mole, which was broken by Facardine, whereby it destroyed a beautiful basin for shipping. On the opposite side, a long ridge of rocks projects from the shore; the beach is broad, sandy, and firm, excellent for bathing; and the shipping, the boats, and the fishermen, gave an air of industry and animation to the scene. The air of Sidon, like that of most of the Syrian towns on the coast, is very healthy: its dryness and purity, and the refreshing breezes from the sea, morning and evening, prevent the heat from being too oppressive and relaxing. The necessaries, as well as some of the luxuries of life, are very cheap in Sidon: butcher's meat, of which there is no regular market, is very moderate; the fruits are various and excellent; the wines of Lebanon, as well as those of Samos and Cyprus, are some of them of very fine quality and flavor, and sold at a low price. The celebrated Vine d'Oro of Lebanon is one of the most delicious in the world. In fine, there is no recommendation wanting to make Sidon or Beirout most desirable places of residence, but society. On many a lovely spot along this coast, the traveller might wish to pitch his tent for years, even for life, could he but gather a little circle of friends or companions around him—could he but rally some of the associations of his native land, see a few familiar faces draw around his fire-side at evening, to talk of the past and dwell on the brilliant prospects of the future. But his joys and his griefs in Syria and Palestine must all be felt alone; after spending hour after hour—for time flies unheeded amid the ruins of glorious temples, and amid the hills and vales of the prophet and the patriarch—he must return to a silent and desolate home, where no voice of kindness or of love greets him, no kindred spirit can enter into his feelings and sympathize in his details. Leaving the shore, we wandered through the streets, in which there is little appearance of affluence or comfort; the tobacco-shops presented a neat and varied appearance, the handsome, and often gold-flowered glass vases were filled with tobacco of all the colors of the rainbow, from the strong weed of Bagdad, which, like brandy, intoxicates the stranger with a few puffs, to the mild and delicate produce of Latikea, of which he may smoke three pipes innocently before breakfast.

We entered one of the coffeehouses that was filled with well-dressed Turks, lounging on the soft



Seacoast between Tyre and Sidon.

benches; many of them sat at the open windows that looked on the sea, which fell on the sandy beach with a lulling sound. Seating myself at the window, a cup of coffee and a handsome pipe were presented; having no tobacco, my next neighbor, a good-looking Turk, instantly offered me his little bag, to fill my pipe with its contents; for every Turk carries this little bag about him, as inseparably as an Englishman does his watch. In this manner is a great part of the day beguiled by this indolent and apathetic people, sipping coffee slowly, yet eternally, talking at intervals, uttering grave and pithy sentences, stroking their beards, taking off their turbans, and smoothing their bald heads. To relieve this monotony, a story-teller often breaks in, stands suddenly in the middle of the room, and begins his tale with wild gesticulation, and a rapid flow of words. The Turk listens intently, and then breaks forth into loud peals of laughter, shaking his heavy sides and wide garments with infinite glee, feeling all the luxury of the contrast, like a child relieved from its task, or a bird let out of its cage. In the evening we walked through the gardens of Sidon without the walls; they were full of fruit, and the cottages of the peasants stood in the midst of them. It was beautiful to see this specimen of industry, neatness, and comfort, so unlike the dreary hamlets scattered over a great part of Syria and Palestine. Here every man rejoiced in the fruits of his own labor, and sat under the shadow of his own vine and fig-tree. The Syrians were comely in their persons, and neat in their attire; the graceful cap and tassel, and the tunic, set off their light and slender forms. Many of the young women wore several rows of gold coins braided into their hair, and

falling on each side of the face as low as the bosom, and the hair of others was braided behind, and fell down the back in long tresses; they wore sandals on their feet.

"CHANGE OF FEELING."

"O! there are looks and tones that dart
An instant sunshine to the heart."

THERE are few persons of susceptibility who have not observed the powerful effect which is sometimes produced upon the heart, by a simple word, a look, an attitude, under peculiar relations of thought or feeling. There are moments when the soul melted by the influence of some mighty spell receives impressions which in its cold and guarded hour would have passed unheeded. Things we are accustomed to consider as too insignificant for notice, become, when connected with some new associations, possessed of the most brilliant and attractive beauties; and objects over which our eyes have glanced a thousand times regardlessly, will suddenly arrest them as if by the power of fascination.

Who has not felt a soul-inspiring strain of music wafted slowly o'er the moonlight waters when all was still as midnight, and not the murmur of wind or wave broke in upon the dream of melody? yet that strain had oft been heard amid the busy haunts of society, without drawing forth from the heart one responsive echo, but now it is in harmony with all around, and breathes upon the spirit with a bland and almost resistless enchantment. Who has not gazed upon forms which seemed the realized creation

of mid-summer's dream, which shone but once and then vanished away for ever; seemingly as if it were lighted from some purer sphere, and breathing the bloom and freshness of another being? yet perhaps eyes as bright, forms as lovely, are continually surrounding us, but we gaze upon them coldly for they came not before us sparkling with fairy splendors. O! there is power beyond expression, in the last glance of those whom we love, when the light is just fading from their eyes as the spirit flutters to be gone. There is an energy in the last tone of parental admonition, when the tongue falters and the lip quivers in its mortal agony, which fastens upon and clings for ever to the memory, and there is a sadness in the farewell of departing friends when they expire, which seems not the word but the sigh of departing life, resting like a cloud upon us and casting even in the sunshine of hope and happiness its solemn gloom upon our minds; yet faint and powerless would have been the glance and the tone, unconnected with the awful ideas of eternity.

It is this relation which gives efficacy to all things and makes a consistency of feeling with the connexion of time and place. There is an influence in local circumstances. Never does the savage appear in his rude and native majesty, save when wandering in his own wild woods or in his sylvan solitude; and never does the Swiss song sound with such an eloquent sweetness, as when heard amid the rocks and hills of his own native country. There is an order and harmony in nature which when properly attuned, one cord vibrates to another, until all nature joins in the glorious melody. Would you hear the blithe and the beautiful song of the feathered minstrels? seek it not amid the busy haunts of men, but in the solitude of some far-off mountain. The great may make artificial hills and break each streamlet with a cascade, and crown each summit with a ruin; but does this compare with the foam and fury of the cataract in the quiet glade and in the bosom of tranquillity? Would you see Nature in her might and majesty, seek her upon her native throne.

It is among savage hills and cleft rocks and gloomy forests, we are to trace the maniac path of the cataract, and hear its long howl through the fearful solitude of profound silence.

It is as we stand upon the projecting cliff, where the fury of the wild wave dashes high, that we may behold the castellated ruins of former years, for these are congenial scenes, and it is by a view of them that they are impressed upon the mind.

"A little word in kindness spoken,
A motion or a tear,
Has often healed the heart that's broken,
And made a friend sincere."

REFLECTION.

THE Past—where is it? It has fled.
The Future? It may never come.
Our friends departed? With the dead.
Ourselves? Fast hastening to the tomb.
What are earth's joys? The dews of morn.
Its honors? Ocean's wreathing foam.
Where's peace? In trials meekly borne.
And joy? In heaven, the Christian's home.

WILLIAM PENN.

WILLIAM PENN is best known to us perhaps, as the peaceful founder of Pennsylvania, who earned the enviable distinction of having treated the Indians as they deserved to be treated and having received from them the liveliest proofs of affection and fidelity. We follow in imagination the triumphant marches of Napoleon, and we are surprised at what he overcame. We are dazzled by the splendor of his victories, and amazed at the strength of his indomitable will. But when we call to mind that he was actuated, for the most part, by nothing higher than sways the actions of ambitious school-boys, our amazement is turned into shame, that man who is placed at the head of creation on earth, and endowed with the prerogative of a moral nature, should be a slave to himself. It was Penn's distinction, on the contrary, to obey his moral nature, to give conscience her rightful supremacy; to gain the greatest of all victories, the victory over himself. It is comparatively easy to go forth with all the enthusiasm of a chevalier, when excited by a glow of passion, or followed by the world's applause; but it is only one in a thousand, who like him, has successfully battled with the temptations which "do so easily beset us." Here is the evidence of a true heroism. The power which enabled him to do this was derived from his Christian faith; the efficacy of prayer was to him, from early youth, a soul-sustaining reality. He felt assured that his spirit could be acted upon by the Infinite Spirit. He knew that man could receive divine assistance, and his whole life was a demonstration of the fact. He knew that Christian faith and Christian love would sustain him in every event of life, however dark and unusual, as on the occasion of his memorable treaty with the Indians. "See him," says another, "with weaponless hand sitting down with his followers in the midst of savage nations, disarming them by his justice, and teaching him for the first time to view a stranger without distrust. See him, with his companions, establishing his commonwealth on the sole basis of religion, morality, and universal love."

The life of Penn furnishes us a happy solution to the dark problem of the object of our being. While many have sacrificed their noblest energies to a mistaken theory of life, he has taught mankind by his precept and example, that no part of nature should be despised or neglected. He was as active in his benevolence, as he was silent in his meditations; and although he knew by experience, that "the life of God in the soul of man," is as far above the life of the body as heaven is above the earth, it was his wisdom to know too, that the path to heaven leads through this world; and he was accordingly as faithful in the manifold relations of daily life as in his private devotions. He has taught us that a life of patient meditation is not incompatible with a life of unremitted exertion; and he especially calls upon those who think that business must come first and religion afterward, to renounce their error and seek a closer communion with the unseen and eternal



Lake of Gennesaret. with the Town of Tiberias, looking toward the Country of the Gadarenes.

TIBERIAS, AND THE SEA OF GALILEE.

TIBERIAS, one of the principal cities of Galilee, as erected by the tetrarch Herod Antipas, who gave it this appellation in honor of the emperor Tiberius. It was this Herod who beheaded John the Baptist (Matt. xiv. 3-11), and who sought the life of CHRIST himself. (Luke xiii. 31.) He probably resided in Tiberias; which may be the reason why the SAVIOUR never visited this place. It was situated near the sea of Galilee, on a plain of singular fertility, which was greatly increased by assiduous cultivation. Josephus describes this region as a perfect paradise, blessed with a delicious temperature, and producing the fruits of every climate under heaven, not at stated periods merely, but in endless succession throughout the year. The neglect of agriculture in modern times has, of course, made it less productive; but the mildness of the climate, and the richness of the soil, are still extolled by travellers. When the Romans made war upon the Jews, Tiberius surrendered without waiting for a siege: on this account the Jews remained unmolested; and after the destruction of Jerusalem, this city became eminent for its academy, over which a succession of Jewish doctors presided until the fourth century. In the early ages of Christianity, Tiberias was an episcopal see; in the seventh century it was taken by the Saracens under the calif Omar; and though it passed into the hands of the Christians during the crusades, the Mahometans regained the possession of it toward the close of the fourteenth century. Widely scattered ruins of walls and other buildings, as well as fragments of columns, indicate the ancient extent of Tiberias. The stone of these ruins is described by the Rev. William

Jowett as being "very black, so that there is nothing about them of the splendor of antiquity—nothing but an air of mourning and desolation. In this circumstance they differ so greatly from the magnificent antiquities of Egypt and Greece, as to leave the most sombre impression on the fancy: they are perfectly funereal."

The modern town of Tiberias, which is delineated in our engraving, is, by the natives, called Tabaria, or Tabbareeah; it occupies part of the site of the ancient city, and is situated at a short distance to the east from the sea of Galilee. It is surrounded with walls and towers, which at first view are very imposing: on a nearer approach, however, their insignificance is apparent. A few cannon would put them down in an instant, though to an assault from the natives they would present, probably, a very long and effectual resistance. One fourth of the space within the walls is stated by Dr. Richardson to be unoccupied by house or building; and many parts of the town are in a ruined and filthy condition. The population has been computed at one thousand five hundred or two thousand persons; eighty houses are occupied by Christians, and one hundred and fifty by Turks, but the largest portion (amounting to two hundred) is tenanted by Jews of all nations, who come here to spend the rest of their days. On the north side of the town, not far from the lake, there is a Greek church, the architecture of which exhibits much of the character of those sacred edifices which were erected by the Emperess Helena: it is said to occupy the identical spot on which stood the house of the apostle Peter, who, previously to his becoming a disciple of JESUS CHRIST, had been a fisherman on the lake.

To the south of Tiberias lie the celebrated hot baths, the water of which contains a strong solution of muriate of Soda (common salt), with a considerable intermixture of iron and sulphur; it emits a powerful sulphureous smell. A thermometer placed in different spots where the water gushes out, rose to the various heights of 131, 132, 138, and 139 degrees of Fahrenheit; in the bath, where it cools after standing some time, its temperature was 110. An humble building is erected over the bath, containing mean apartments, on one side for men, on the other for women: it is much frequented, as a cure for almost every complaint, particularly by the Jews, who have a great veneration for a Roman sepulchre excavated in a cliff near the spot, which they imagine to be the tomb of Jacob. About a mile from the town, and exactly in front of the lake, is a chain of rocks, in which are distinctly seen cavities of grottoes that have resisted the ravages of time. These are uniformly represented to travellers as the places referred to in the gospel history, which were the resort of miserable and fierce demoniacs, upon one of whom JESUS CHRIST wrought a miraculous and instantaneous cure. (Matt. viii. 28; Mark v. 2, 3; Luke viii. 37.)

The sea of Galilee, which is seen in the back ground of our engraving, derives its name from its situation on the eastern borders of the province of Galilee; it was anciently called the sea of Chinnereth, or Chinneroth (Numb. xxxiv. 11; Josh. xii. 3), from its vicinity to a town of that name. In 1 Mac. xi. 67, it is called the water of Gennesar, and in Luke v. 1, the lake of Gennesaret, from the neighboring land of that name. Its most common appellation is the sea of Tiberias, from the contiguous town of Tiberia, which has been described in the preceding paragraphs.

This capacious lake is from twelve to fifteen miles in length, and from six to nine miles in breadth; along the shore its depth varies, and in some parts it may be sixty feet. The water is perfectly fresh, and is used by the inhabitants of Tiberias to drink, and for every culinary purpose. The waters of the northern part of this lake abound with delicious fish. It is remarkable that there is not a single boat of any description on the sea of Tiberias at present, although it is evident from the gospel history that it was much navigated in the time of JESUS CHRIST. The fish are caught partly by the fishermen going into the water up to their waists, and throwing in a hand-net, and partly with casting-nets from the beach; the consequence is, that a very small quantity only is taken, in comparison of what might be obtained if boats were employed. This accounts for the circumstance of fish being so dear at Tiberias, as to be sold at the same price per pound as meat. Viewed from a height, the water looks, amid the surrounding mountains, like an immense reservoir; and from the northern part being covered with volcanic remains, it has been conjectured that this lake was at one period the crater of a volcano. It has been compared by travellers to Loch Lomond in Scotland; and, like the lake of Windermere in Westmoreland, it is often

greatly agitated by winds. A strong current marks the passage of the Jordan through this lake; and when this is opposed by contrary winds, which blow here with the force of a hurricane from the southeast, sweeping into the lake from the mountains, a boisterous sea is instantly raised, which the small vessels of the country (such as were anciently in use) were ill qualified to resist. Such a tempest is described in Matt. viii. 24-26, which was miraculously calmed by JESUS CHRIST with a word. The broad and extended surface of this lake, "covering the bottom of a profound valley, surrounded by lofty and precipitous eminences, when added to the impression under which every Christian pilgrim approaches, gives to it a character of unparalleled dignity."

BEGINNING OF THE YEAR IN VARIOUS NATIONS.—

The Chaldeans' and Egyptians' years were dated from the autumnal equinox. The ecclesiastical year of the Jews began in the spring; but in civil affairs they retain the epoch of the Egyptian year. The ancient Chinese reckoned from the new moon nearest the middle of Aquarius. The year of Romulus commenced in March, and that of Numa in January. The Turks and Arabs date their year from the 16th of July. Dremeschid, or Genschied, king of Persia, observed, on the day of his public entry into Persepolis, that the sun entered into Aries; and in commemoration of this fortunate event he ordained the beginning of the year to be removed from the autumnal to the vernal equinox. The Brachman begin their year with the new moon in April. The Mexicans begin it in February, when the leaves begin to grow green. Their year consists of eighteen months, having twenty days each, the last five days are spent in mirth, and no business is suffered to be done, nor even any service at the temples. The Abyssinians have five idle days at the end of their year, which commences on the 26th of August. The American Indians reckon from the first appearance of the new moon at the vernal equinox. The Mahometans begin their year the minute in which the sun enters Aries. The Venetians, Florentines, and the Pisans in Italy, began the year at the vernal equinox. The French year, during the reign of the Merovingian race, began on the day on which the troops were reviewed, which was the first of March. Under the Carlovingians it began on Christmas-day, and under the Capetians on Easter-day. The ecclesiastical begins on the first Sunday in Advent. Charles IX. appointed, in 1564, that for the future the civil year should commence on the first of January. The Julian calendar, which was so called from Julius Cæsar, and is the old account of the year, was reformed by Pope Gregory in 1582, which plan was suggested by Lewis Lilio, a Calabrian astronomer. The Dutch and the Protestants in Germany introduced the new style in 1700. The ancient clergy reckoned from the 25th of March; and the method was observed in Britain until the introduction of the new style A.D. 1752; after which our year commenced on the first of January.



Sand Storm.

THE SIMOOM.

Of the extraordinary visitations to which the deserts are subject, the hot wind, called by the Arabs the *simoom*, and by the Turks *samiel*, both of which words mean the *poison-wind*, seems the most remarkable and injurious. The accounts which are given by different persons vary so greatly, that it is difficult to deduce from them a connected statement of facts; and some writers have gone so far as to discredit the stronger effects which have been ascribed to this phenomenon. The fact seems to us to be, that, in this, as in a thousand other matters, people infer analogies between what they do see and what they do not see; and in this they may be, and often are, wrong, from not knowing, or not taking into account, the circumstances by which differences and modifications may be and are produced. Travellers, whose routes almost always lie along the borders of the great desert, and who never visit those vast interior solitudes of sand which only the natives dare to traverse, witness only these phenomena in the most mild and mitigated forms, and thoughtlessly infer that they must be equally mild in the very heart of the desert, although they know that the causes which produce them must there be operating with more intense effect. What we ourselves deduce from the balance of testimonies is, that these phenomena are exhibited with diminished force the greater our distance from the heart of the desert is increased; and that the travellers who describe those mitigated phenomena which alone they noticed in their border routes, have no right to deny the concurrent testi-

mony of history and of the natives, which ascribe to them stronger developments and more ruinous effects in the interior of the desert.

The simoom blows generally from the direction of the nearest sandy deserts; in Syria from those of Arabia, and in Egypt from those of Africa. Dr. Russell informs us that "the true simoom" (by which expression he seems to have felt the necessity for such a distinction as we have now made) "never reaches so far north as Aleppo, nor is common in the desert between that city and Basrah." He was, however, careful to collect the reports of the Arabs, which he thus states: "They assert that its progression is in separate or distinct currents, so that the caravan, which in its march in the desert sometimes spreads to a great breadth, suffers only partially in certain places of the line, while the intermediate parts remain untouched. That sometimes those only who happen to be mounted on camels are affected, though more commonly such as are on foot; but that both never suffer alike. That lying flat on the ground till the blast passes over is the best method of avoiding the danger, but that the attack is sometimes so sudden as to leave no time for precaution. Its effects sometimes prove instantly fatal, the corpse being livid, or black, like that of a person blasted by lightning; at other times it produces putrid fevers, which prove mortal in a few hours; and that very few of those who have been struck recover." This is not all they tell. The attention of Thevenot was strongly drawn to the subject, and he made particular inquiries concerning it, at the towns on the borders of the desert, of different persons in different places.

He says that they all agreed in their testimony, which is the same in substance as that which has just been adduced, with the additions, which, we know, form part of the current account among the natives. "No sooner does a man die by this wind than he becomes black as a coal, and if one take him by the leg, arm, or any other place, his flesh comes off from the bone, and is plucked off by the hand that would lift him up. They say that in this wind there are streaks of fire as small as a hair, which have been seen by some, and that those who breathe in those rays of fire die of them, the rest receiving no damage." We willingly confess that there are some points in these statements which savor of exaggerations; but we consider that, taking the whole of these reports at their lowest value, they evince at least that the simoom is sometimes productive of immediately fatal effects in the interior of the deserts. Most of the described phenomena suggest a highly electrical state of the atmosphere, and the symptoms of immediate putrefaction are such as occur in cases of death by lightning.

The *mitigated* effects of this wind, as experienced and reported by European travellers, may thus be described.

The Arabs, and others accustomed to the deserts, are aware of the signs which portend a coming simoom, and if they make the discovery before a day's journey is commenced, can not be induced to depart from their station until it has overpast. Even the cattle are aware of the approaching evil, and manifest their uneasiness by plaintive cries, and other tokens of distress. All animated nature seems to take alarm, and to throw itself upon the defensive. The horizon gradually assumes a dull purplish or violet hue, while the sun becomes shorn of his beams, and looks red and heavy, as through a London fog. Then comes on the hot wind, laden with a subtile and burning dust, or rather fine sand, which penetrates to all things; the atmosphere becomes exceedingly hot, and the air, less even from its heat than from its noxious qualities and the particles with which it is laden, is breathed with difficulty; and even under the shelter of a tent, and with every possible precaution and safeguard, the effect is most distressing. It fires, burns, dries up the lungs, the mouth is parched, the skin dry, and a feeling of universal debility prevails, while the pulse rises as in a fever. Life seems attacked in its most delicate organs; and there is much reason to think that any prolonged subjection to even this greatly mitigated form of the evil would be attended with serious consequences; and still more if no measures of protection against it were sought. Mr. Madden, who was exposed to a somewhat slight simoom in the desert of Suez, and remained in his tent while it lasted (above seven hours) describes the sensation as inexpressibly distressing; but he does not think it was the degree of heat that occasioned it, for in Upper Egypt he had suffered an equally high temperature without any such prostration of strength and spirits. But he believes the hot wind of the desert to be connected with an electrical state of the atmosphere, which has a depressing influence on the

nervous system. And this, it will be remembered, is the opinion of a medical man.

In Egypt, where, as in Palestine, this wind is much less alarming than even in the border deserts, it exchanges its name of *simoom* for that of *kumseen* (fifty), because it is felt the most frequently during fifty days about the vernal equinox.

It is not so much alleged, generally, that the naked operation of the simoom is so destructive, even in the interior of the great deserts, as the immense drifts and whirlwinds of sand which it raises. We have seen that there are some indications of this,—that it fills the air with fine sand, even in the border deserts; and how much more, then, in those vast interior expanses, where, even in a state of rest, the immense hills of sand thrown up by the winds, and left to be swept away and removed by some future storms, bear evidence to the operations of the wind upon these sandy surfaces. Immense clouds of sand are, under the operation of the wind, raised high in air, and in their ultimate fall overwhelm whatever lies below. Often the whirling eddies of the wind condense the drifting sands into more compact masses, causing them to spindle up into tall and rounded columns, which, still acted upon by the power which reared and sustains them, keep moving over the plain till they fall in a hill or wide-spread sheet of sand. Thus the surface of the desert is, to a considerable depth, in frequent motion; and thus, we are told, caravans and entire armies have been slain and buried by the concurrent effects of the hot wind, and of the immense masses of sand which it drifts so furiously along. To such a cause history attributes the loss of the army which the mad Persian conqueror, Cambyses, sent across the desert against the inhabitants of the oasis of Ammon. Happily these sand-storms, in their more terrible forms, are far from common; else no one could adventure to pass the desert. They are also less frequent, and less formidable in the deserts of southwestern Asia than in those of Africa, westward from Egypt, where the tracts of sand are more extensive, and seem to be more easily set in motion.

As the simoom usually moves at a certain height in the atmosphere, the common resource against its effects is, as already intimated, to lie flat on the ground till they pass over. Man was probably taught this resource by observing that, at such times, camels and other animals bend their heads to the ground and bury their nostrils in the sand. Shelter from the sand-storm is sought in nearly the same manner. The traveller generally lies down on the lee side of his camel; but, as the sands are soon drifted around him to the level of his body, both the beast and its owner are obliged frequently to rise and change their position, to avoid being entirely covered. If the storm is of long duration, as it often is, this constant exertion, with the effects of the hot wind, and the dread and danger of the sandy inundation, produces such weariness, sleepiness, or despair, that both men and animals remain on the ground, and a very short time suffices to bury them under the sands. It is thus chiefly that the simoom becomes extremely des-

destructive to the life of man and beast. It is easy, in our own cool and quiet country, to sit down and doubt about these things; but the whitened bones which strew the desert bear witness to their truth. And any one who, at even a safe season of the year, has passed over such wastes, and during the halt of his caravan has lain down for rest upon the sand, wrapped up in his cloak, must, like the writer of this, have felt a very serious conviction of the probability of such events. The only marked objects in the sandy desolation are the huge hillocks of drifted sand; and he knows, that such winds as formed them will disperse them all abroad over the face of the land; and he knows not but that, after the next storm, a mound of sand may cover the place whereon he lies.

These showers and whirlwinds of sand, or of sand and dust, or of dust only, according to the nature of the country, were certainly known to the Hebrews. Their then recent experience in the desert, taught them to know the full intensity of those visitations with which Moses denounced that God would scourge their disobedience: "Thy heaven that is over thy head shall be brass; and the earth which is under thee shall be iron. Jehovah will give instead of rain to thy land dust; and *from the heavens shall dust descend upon thee until thou be destroyed.*"

The threat of dust to the land instead of rain, brings to mind the tendency of the drifted sands to encroach upon the cultivable lands of the borders. The tendency of actual cultivation is to repel such encroachments; but, where cultivation is discontinued, a very serious loss of cultivable soil is in the course of time incurred. Ample proof of this may be seen on the south and the southeast borders of the Holy Land, showing the actual fulfilment of the denunciation we have adduced. Here again the desert is comparable to the sea; for, as the sea encroaches on the land, so do the sands encroach upon the cultivable soil.

This text might also be adduced in support of the statement that ascribes largely destructive powers to these visitations. They have not been unknown even in the northernmost parts of Syria. Witness William of Tyre's account of the whirlwind of sand to which he ascribes the victory of the Moslems over the prince of Antioch, in the territory of that name. And we might, therefore, expect them to be still more common in Palestine, as they are in Egypt and in other countries bordering on extensive plains. Moses describes the desert in which the Israelites wandered for forty years as "a desert land, the waste howling wilderness;" and as "that great and terrible wilderness, where were fiery serpents, and scorpions, and drought, where there was no water;" and of which Jeremiah more amply speaks as of "a land of deserts and of pits, a land of drought and of the shadow of death, a land that no man passed through, and where no man dwelt." And that among the characteristics indicated in these terms, those which we have described may, to some extent, be comprehended is shown by the account which William of Tyre gives of the march of Syracon, general of the army of Nouredin Emir of Damascus, and uncle of the famous Saladin, into this very desert, between Syria and Egypt, in which

the Israelites wandered so long. During the march the troops were encountered by a whirlwind of such force, that it raised into the air vast clouds of sand, which obscured the sun and occasioned a thick darkness. So densely filled was the air by the sandy particles, that no one dared to open his mouth or eyes, to speak to another or to look around him. The horsemen deemed it prudent to dismount; and many prostrated themselves and dived their hands deep into the sand, to obtain such fast hold as might prevent the wind from whirling them up, and breaking their neck or legs in casting them again to the ground. Some of the men did lose their lives; many camels also were lost, and most of the provisions; and the army was, for the time, quite dispersed by the storm. "For in this desert," says the historian, using the standard comparison, "waves of sand are raised and tossed about, like the waves of the sea when troubled by tempestuous winds; so that to navigate a stormy sea is, at times, not more dangerous than to pass such deserts."

THE MIRAGE.

ANOTHER phenomenon of the desert is the *mirage*. This is an illusion, producing the most cruel disappointment to those who traverse the dry and sandy plains, as it assumes precisely the appearances most calculated to delight the traveller and to seduce him from his way. Sometimes he sees before him a fine lake; but if, in the eagerness of thirst and heat, he hastens toward it, the margin seems to retire, so that the surface of water as he advances becomes narrower, and at last disappears altogether; but the whole appearance may be again exhibited before him at the same distance as that at which it was first observed. All this time the impatient traveller will seem to those who have remained behind, to have reached the margin, to have entered the lake, and to have forded it to the other side. Or again, there may seem to be the fair similitude of a green oasis, with its tufted palms, traversed by a broad river. In such cases the illusion of water is complete: for not only are the bushes or other objects which may be on the margin reflected in it, but it has something like the ripple of water; and, in such instances as the first, is streaked by those numerous shining patches observable on the surface of lakes when viewed from a distance. The best prepared travellers are unable to resist the force of this illusion, or to believe that which they see to be unreal. The cruel mockery of such an appearance, in the midst of these arid steppes, may in some degree be conceived, but not properly appreciated without actual experience.

This phenomenon is very common even on the skirts of the desert, and must have been tolerably well known to the Hebrews. They called it by the name *serab* (the desert water), which it still bears among the Arabs, who, as well as the Persians, often use it, by a fine metaphor, to express disap

pointed hope. To this one prophet seems to allude when he asks, "Wilt thou be altogether unto me as unreal waters?" And there is every reason to conclude that Isaiah draws his beautiful metaphors from the apparent effects thus exhibited in the desert, when he foretells the glories of the Messiah's reign in glowing language which a poet of our own has not unworthily imitated:—

"The swain, in barren deserts, with surprise
Sees lilies spring, and sudden verdure rise;
And starts amid the thirsty wilds to hear
New falls of water murmuring in his ear.
On rifted rocks, the dragons' late abodes,
The green reed trembles, and the bulrush nods;
Wide sandy valleys, late perplexed with thorn,
The spiny fir, and shapely box adorn;
To leafless shrubs the flowery palms succeed,
And odorous myrtle to the noisome weed."

FORMATION OF CHARACTER.

To the acquisition of extensive knowledge, incessant application and industry are necessary. Nothing great or good has been achieved without them. Be willing then to labor; be not satisfied with superficial attainments, and accustom yourself to habits of accurate and thorough investigation. Explore the foundations and first principles of every science. It is observed by Locke, that "there are fundamental truths that lie at the bottom—the basis upon which a great many others rest—and in which they have their consistency; there are teeming truths, rich in the stores with which they furnish the mind, and, like the lights of heaven, are not only beautiful and interesting in themselves, but give light and evidence to other things, that without them could not be seen or known." These are the truths with which we should endeavor to enrich our minds. Be select in your reading—become familiar with the writings of the great master spirits of the world, who will enrich your mind with profound, enlarged and exalted views; and who, while they form you to habits of just and noble thinking, will also teach you to cherish pure and generous feelings. If you would make these thorough acquisitions, you must guard against immoderate indulgence of your passions, and the seductions of evil companions. A life of dissipation and pleasure is death to superior excellence. A body invigorated by habits of temperance and self-denial, and a mind undisturbed by unholy passions, serene and cheerful in conscious rectitude, are most powerful auxiliaries in the pursuit of science.

It will be equally important in you to guard against self-sufficiency and vanity. This temper is an effectual barrier to high intellectual improvements. Frequently reflect upon the small extent and imperfection of your attainments on the vast regions of science that are yet unexplored by you; on the ten thousand books that you have never read or seen, or of which perhaps have not even heard. Remember too the lofty attainments that have been made by some profound scholars both of ancient and modern days.—I would recommend you to read in early life, a few well-selected biographies of men who were distinguished for their general knowledge. Read the lives

of Demosthenes, of Newton, of Locke, of Hale, of Haller, of Doddridge, of Johnson, and of other accomplished and illustrious scholars. Observe the ardent attachment and intense industry with which they cultivate science, and the astonishing acquirements which they made—their high valuation of time and careful improvement of it; compare your habits and attainments with theirs—not to repose in sluggish despondency, but to rouse yourself from apathy and sloth, to a noble emulation of rising to an equality with them. It was by no secret magic that these mighty scholars attained to distinction and fame; it was by patient, persevering, untiring industry. If the eloquence of Demosthenes shook with its thunder the throne of Philip, and ruled the fierce democracy of Athens; and if the vehement denunciations and powerful appeals of Cicero drove Catiline from the senate-house, and made Cesar tremble, it was by the private studies and profound meditations of the closet—their minds having been invigorated, and expanded, and enriched, and ennobled with diversified knowledge, lofty sentiment and generous feeling. If Newton, with a flight more adventurous than the eagle's, soared to the very boundary of creation; if he explained the laws that govern the universe, and let in a flood of light upon the world—it was ardent attachment to science—it was intense, patient, untiring industry that gave to the pinions of his mind that vigor which elevated and sustained him at so lofty a height. If Locke and Reid have dispelled the darkness that had for ages settled on the human intellect, and have freed the sciences of the mind from the intricacies of the schools, it was not merely by the force of their own genius, but by deep, patient, and often-repeated meditation and study. If Burke charmed listening senates by the masculine strength and brilliancy of his thoughts—if Mansfield and our Hamilton illuminated the bar by the splendor of their learning and eloquence—if Hall and Chalmers proclaimed from the pulpit immortal truths in their loftiest strains—it was not only because they ranked among the first scholars, but also among the most laborious men of the age. Contemplate the character of these illustrious men; imitate their industry, their eager love of learning, and the zeal with which they pursued it, and you may equal them.

COST OF THE BRITISH WARS.—It has been computed, says the Philadelphia Chronicle, from authentic sources, that the wars of England, from the revolution to the battle of Waterloo, and defeat of Napoleon, cost her no less than 4,000,000 lives, and £1,500,000,000 in treasure. What fields of carnage, what profusion of cruelty, misery, and anguish, attended this immense expenditure.—340,000 men, and £151,000,000 was expended in tyrannizing over the North American colonies; was not all this expended in sustaining an unjust oppression of a free people? From the war of the French revolution to the battle of Waterloo, 2,100,000 lives, and 1,058,000,000 pounds sterling were sacrificed by the British nation in keeping up the "glorious pageantry" of the continental war, and the military power and prowess in which England so much prides herself.



Interior of a Sugar-Refinery.

A DAY AT A SUGAR-REFINERY.

SUGAR REFINERIES have certain peculiarities in their external appearance, whereby they are distinguishable from most other factories seen in a city; they are very lofty, consist of an unusual number of floors or stories, and are generally lighted by very small windows. In a large sugar-refinery in this city, which we recently visited, these peculiarities are very observable. In making the circuit of the buildings, we counted over one hundred windows, most of them small, and some at such a height as to have seven floors between them and the ground. The interior, too, has something peculiar in its appearance, arising from the shallowness of the rooms compared with their great extent; these rooms are very numerous, nearly square, and no higher than is absolutely necessary, since the chief desideratum in a sugar-refinery is a large extent of flooring. The greater part of this building is formed of brick, stone, and iron; a very necessary precaution against fire, on account of the inflammable nature of the substance prepared therein.

Most readers are probably aware, that *lump* or *loaf* sugar is prepared from common brown sugar by a refining process, and that this process is conducted in the buildings to which we have alluded. In describing the mode of operation, we shall not find it necessary to trace the history of sugar in its previous state; but still a few remarks thereon will aid the object in view, by showing the successive conditions or forms in which the sugar is presented.

A field of sugar canes when standing, in the month

of November, when it is in arrow or full blossom, is one of the most beautiful productions that the pen or pencil can describe. It commonly rises from three to eight feet in height, a difference of growth that very strongly marks the difference of soil or culture. It is, when ripe, of a bright and golden hue; and where exposed to the sun is often beautifully streaked with red. The top is of a bright green color; but the more dry it becomes, from either an excess of ripeness or a continuance of drought, it assumes a russet yellow, with long and narrow leaves depending; from the centre of which shoots up an arrow, like a silver wand, from two to six feet in height, and from the summit of which grows out a plume of white feathers, which are delicately fringed with lilac dye; and indeed is, in its appearance, not much unlike the tuft that adorns this particular and elegant tree. Such is the external appearance of the plant yielding the sugar juice. The juice is expressed from the cane, then formed into a kind of sirup, from which impurities have been removed; and lastly a brown granulated substance, from which a considerable portion of molasses, or uncrystallized sugar, has been removed.

The large sugar hogsheads which we notice at the shops of the retail grocer, contain moist sugar somewhat resembling in quality that which is imported by the refiner, but with a finer and softer grain. This sugar, as every housewife knows, has various shades of brown color, according to the quality; and the principle cause of this color is, that a quantity of black molasses which formed part of the original cane juice, is still mixed up with the crystallizable

parts of the sugar—not having been wholly removed by the processes to which the cane juice is subjected before importation. The particles of sugar in their pure state are white; and to present them in this white crystalline form is the object of the sugar-refiner, who adopts means for expelling the molasses, and also certain impurities which are incorporated with the brown or Muscovado sugar, as imported in the hogsheads.

It seems probable that the art of refining sugar was first introduced into Europe by the Venitians, and was practised in Venice some time before it was adopted in any other European country. The foul and black sugar brought from Egypt at the end of the thirteenth century, was the first material upon which the art of refinery was employed. The Venitians, in their first attempts, converted the dark moist sugar into sugar-candy; but they soon sought to obtain refined or crystallized sugar by a quicker and more profitable process; which they at length effected by the use of conical moulds, such as have ever since been used. From Venice the art passed into various European countries; and since the West India islands and portions of our own country have been fertile in the production of sugar, refineries have increased to a considerable extent in nearly all the civilized countries in the world.

Let us suppose, then, that a hogshead of sugar imported from abroad, is brought to a refinery, and let us follow it through the routine of processes till it assumes the form of a conical lump of white sugar. This will enable us to describe the uses of the various rooms forming a large sugar refinery.

In the refinery which we lately visited, the hogsheads of sugar, having been brought on carts from the docks to the front of the building, were hauled up by a crane, and drawn in at an open door to a large square room. This was the first part of the refinery which we visited, and a busy scene it presented. Here was a hogshead of sugar suspended from the crane; there, was another hogshead deposited on a low iron carriage or truck, and being further inward; near it was a third being weighed—a process requiring tackle of no slight kind, since the hogsheads sometimes weigh eighteen cwt. each; further on was a man knocking out the head of a hogshead, and a party emptying the contents on a boarded floor; while other hogsheads, some empty and others full, were lying around in various directions. Our frontispiece represents the appearance of these objects.

The sugar, when about to be operated on, is transferred from the hogshead to a wooden floor, whence it is shovelled into large circular vessels called “blow-up cisterns.” If we give a literal acceptance to technical terms, we should sometimes smile, and at other times feel a little alarm; in the present case it appears that the name is given in allusion to the mode in which steam is admitted to the contents of the vessels. The cisterns are six or seven feet in diameter, and about five feet in height; and the purpose for which they are employed is to dissolve the sugar, preparatory to the removal of earthy and other impurities with which it is contaminated. The reader must bear in mind that, notwith-

standing the purifying process whereby cane juice is converted into brown sugar, there are still three kinds of substances, which require to be removed from this sugar before the white crystalline state can be obtained, viz., earthy and other impurities, coloring matter, and molasses; and that very distinct processes are resorted to in order to effect the removal. To remove the impurities is the first object. The sugar is, as before stated, thrown into the blow-up cistern; and water is admitted to it from a cistern at the top of the house, which supplies every part of the establishment. Into the cistern containing the sugar and water a small quantity of lime-water is pumped. From a steam-pipe, steam is forced or blown by own its pressure into the solution, by which the latter becomes heated in a short space of time. This is one of the many instances in modern manufactures illustrative of the advantages derived from the use of steam as a heating agent. The water in the blow-up cistern being heated by the steam, dissolves the sugar, aided by constant stirring. The lime-water, which aids in this process, is brought from large vessels in the building, and the lime being dissolved in water and stirred till a milk-like fluid is produced, is pumped from them as wanted.

This part of the process is one, in which great improvements have been made of late years; indeed, the same to a certain extent, may be said of all departments of the refining business. Under the old mode of procedure, the sugar was dissolved in lime-water over a fire, whereby it was subjected to a variable temperature injurious to the quality of the sugar. The clarification was effected by the admixture of a large quantity of bullock's blood, and scum several inches in thickness, was allowed to collect on the surface of the vessel containing the sugar, and was thence removed by a broad skimmer. If any liquid containing albumen be mixed with another liquid and heated, the albumen in the act of solidifying, collects together in a sort of film; and in so doing appears to entangle most of the solid impurities floating about in the solution, removing them from the liquid generally. This having been repeated two or three times, the solution of sugar was allowed to flow through a wooden channel into an oblong basket covered with a blanket, through which it filtered into a cistern below, carrying a considerable portion of impurity with it. But in the process which we witnessed, the desired effect is produced in a much more efficacious manner; for the temperature of the solution is not greater than that of boiling water, and the offensive clarifying ingredient is almost wholly dispensed with, the process of clarification being principally effected in the next process. The saccharine solution—called in the language of the refinery, *liquor*—is, in this case, not skimmed at all; but at a certain stage in the operation it is allowed to flow from the blow-up cistern into a range of filtering vessels in a room beneath; into which filters it enters as a thick, opaque, blackish liquid, and leaves them in a beautifully transparent state, though colored of a reddish hue. The arrangement of these filters is exceedingly ingenious. They consist of several cast-iron vessels, each containing a large number of cloth tubes, attached to

short metallic tubes, which are screwed in circular holes in the upper part of the vessels, and hanging vertically downward. Each tube contains a large bag, made of a close kind of cotton cloth, and coiled up so as to make a compact mass of cloth. The liquor flows from the blow-up cisterns into a shallow vessel to which these tubes are attached, and thence through the bags contained in the tubes. The bags being closed at the bottom, no outlet exists for the liquid except through the meshes of the cloth; and as the cloth forming each bag is doubled and redoubled in its tube, the liquid finds its way between the plies or folds of the cloth, and finally exudes in a transparent state. The whole of the impurities, with the exception of a little coloring matter, are retained by the bags and tubes, while the saccharine liquor passes through.

It must be evident, that the impurities left in the bags would soon clog the meshes if not removed. At intervals, therefore, the tubs are unscrewed, and taken out to a washing-yard, where the bags are drawn out, the impurities removed, and bags and tubes thoroughly washed. These impurities still contain a small portion of saccharine matter, which is subsequently extracted by boiling and other processes.

The next point in our visit was to the rooms in which the process of decoloration is carried on. The reader will bear in mind, that the state to which we have traced the sugar in its progress is that of a transparent liquid having a reddish tinge. To remove this tinge without interfering with the transparency of the liquid, is the next object of attention, and charcoal is the agent which modern inquiry has shown to be best fitted for this purpose. It has been long known that common wood charcoal possesses the property of removing, more or less, the odor proceeding from animal or vegetable substances in a state of decomposition; but it was also discovered by the German chymist, Lowitz, that the same substance will remove the color from common vinegar and several other liquids; a fact which soon after led to the employment of charcoal in the clarification of various pharmaceutical preparations, and as an auxiliary in the refining of sugar. About thirty years ago, Figuere, a French chymist, ascertained the additional important fact, that charcoal obtained from animal substances is not only equally efficacious when used in considerably smaller proportion than vegetable charcoal, but that it is capable of decoloring many liquids on which the latter has no effect whatever. The sugar-refiners immediately availed themselves of the knowledge of this fact; and since that time, many different modes have been adopted of employing animal charcoal in refining.

We return, then, to the operations on the sugar which we had traced through the filtering-bags. All the liquor, as it leaves the filters, flows through pipes into other parts of the building occupied by charcoal-cisterns, each of which is a square vessel several feet in height, and provided with a double bottom, the upper one being perforated with small holes. On this perforated bottom a piece of cloth is laid, and on the cloth a layer of powdered animal charcoal, or "bone-black," nearly three feet in thickness. The saccharine

liquor flows on the surface of this charcoal bed, through which it slowly finds its way, percolating to the bottom, then through the meshes of the cloth, and lastly, through the perforations into the vacant space beneath. The effect of this filtration is very striking; for the liquor, which, though transparent, is of a reddish color, when it flows into these cisterns, leaves them in a state of colorless transparency almost equal to that of pure water. Such a complete decoloration is the best proof of the success of the modern improvements in this branch of manufacture. The cloth bags, and the arrangement by which the liquor is made to flow through them, remove all the opaque impurities; while the charcoal and the apparatus of which it forms a part, remove the coloring matters from the filtered liquor.

In the premises is situated a retort-house, supplied with furnaces, retorts, and various subsidiary arrangements. These, whose use might, to a stranger, appear rather inexplicable in a sugar-refinery, exemplify one of the most curious and valuable properties in the charcoal employed. When the process of decoloring the sugar has rendered the charcoal impure, water is poured through the mass in the cisterns, until all the soluble part of the saccharine impurities is removed; after which the charcoal is removed from the square cisterns, carried to the retort-house, and put into iron retorts. The process is so conducted, that the charcoal leaves the retorts in a state as fit for use as when it was first made; all the impurities having been burnt away, without any deterioration in the decoloring qualities of the charcoal. Thus the same portions of charcoal may be used over and over again.

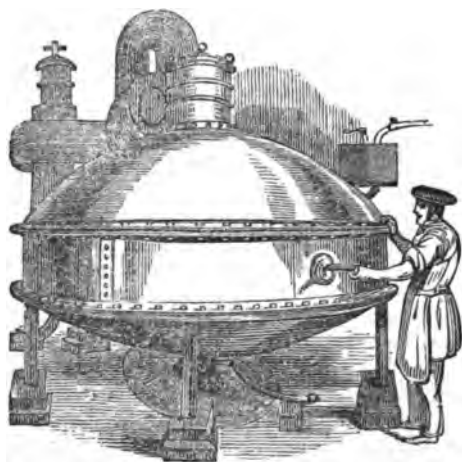
Every one knows that loaf-sugar, as well as moist, possesses different degrees of whiteness and clearness of appearance. The mode in which these different qualities arise we shall presently state; but we may here remark, that it is only the finest qualities which present the pure and colorless appearance alluded to above, after passing through the charcoal. The inferior kinds retain a slight tinge of color.

We next visited that part of the building in which the most important of all the operations is carried on, viz., the boiling. If we were to attempt a description of all the inventions and contrivances which have been brought to bear on this process, it would not only absorb all our remaining space, but would involve scientific details unsuited to our purpose; it must suffice to show how the method usually adopted at the present day differs from the old one, now almost obsolete.

The liquor consists of sugar capable of assuming a crystalline form, molasses, or uncrystallizable sugar—and water; and the object of the boiling is to drive off a portion of the water in the form of steam, and to prepare the sugar for crystallizing. Under the old system, the saccharine liquor was poured into a large copper vessel called a "pan," and there boiled over an open fire, at a temperature gradually rising to 230° or 250°, until the evaporation had caused it to assume a degree of viscosity known by experience to be proper for the purpose. From the pan it was emptied into vessels called "coolers," where it was beaten

violently with an oar or staff, by the action of which the sugar was so far disentangled from the molasses as to be able to granulate, or become partially crystallized. It was found, however, that independent of other evils, the sugar was liable in that process to be injured by the high temperature at which it boiled; for there is a tendency to decomposition even at the temperature of boiling water; and at a still greater heat the tendency is increased. These circumstances led to the happy suggestion of a method of boiling the sugar in *vacuo*. In the common operations with which we are familiar, boiling water is always nearly of one temperature, because it is exposed to a tolerably uniform atmospheric pressure; but if this pressure could be removed by the action of the air-pump or some other means, boiling would take place at a temperature so low that the hand could bear it with impunity. So, likewise, in the case of sugar-liquor; if the pressure of the atmosphere could be removed, the process of boiling, which is nothing more than a very rapid evaporation, would take place at so low a temperature that the sugar would not be injured by it, viz., from 130° to 150° , that is one hundred degrees lower than under the atmospheric pressure. Nearly all the principal sugar-refiners now boil sugar in *vacuo*, more or less perfect; each one adopting a form of apparatus or a routine of processes best suited to the circumstances under which he conducts his business. We shall presently make a few further remarks on the introduction of this plan; but it will be desirable first to trace the sugar through the boiling process.

The process, then, is briefly this: the liquid sugar, after percolating through the charcoal, and being collected in a cistern several feet below the pans, is placed in communication with them by an ascending pipe; and the air being withdrawn from within each pan by means of an air-pump, the liquid sugar ascends the pipe into the vacuum by atmospheric pres-



sure from without, on the same principle as the water ascends in a common pump. Steam is then admitted to a vacant space below the sugar in the pan, and also through pipes traversing the interior; and by these means the sugar is brought to a boiling state

while comparatively at a low temperature, on account of the tolerably perfect vacuum existing above the surface of the liquor in the pan. As the evaporation proceeds, the vapor flows through a large iron pipe into an open court, where a cistern of cold water condenses it as fast as it is formed, and thus maintains a vacuum within the boiler. The sugar, by this evaporation thickens and become partially granulated; and to ascertain how far this process has extended, a most ingenious instrument called a "proof-rod," is used, by which a small quantity of sugar may be taken out without disturbing the vacuum in the pan. A hollow tube is fixed in the pan, with the outer end exposed to the atmosphere, but the inner end immersed in the liquid sugar; this inner end is constructed with a socket and plug, like the key of an ordinary liquor-cock, with two apertures through which, when open, liquor may flow. The proof-rod being introduced into the tube and turned round, unlocks the socket and plug in the tube and allows the liquid sugar to flow through the apertures of the socket and plug into a recess at the bottom of the key. The proof-rod being again turned, locks up the apertures in the tube, and on being withdrawn, brings with it a small sample of liquid sugar.

The attendant boiler then tests the state of the sugar, to ascertain what degree of tenacity and granulation it has acquired. If the result is not satisfactory, the boiling is continued for some time longer; but if satisfactory, a valve at the bottom of the pan is opened, and the sugar flows through a pipe into a room beneath, where vessels are placed for its reception. The sugar, as it flows through, appears to be much altered, for it is now a mass of crystals enveloped in a dark-colored syrup. The purpose to which the pans are applied is to drive off, in the form of vapor, so much of the water which has been mixed with the sugar as to enable the latter to crystallize.

One of the most marked points of difference between the old and the recent methods of boiling is this: that under the old system, the temperature at which the concentration was carried on was so high, that crystallization could not take place till a subsequent cooling had been effected; whereas, under the present system, the crystallization actually takes place, to a considerable extent, in the boiler itself.

After having witnessed the operations and apparatus connected with the boiling, we next followed the progress of the sugar to a room on the lower floor of the building, containing vessels called *heaters*, into which the sugar flows from the pans.

It is a curious circumstance, that under the old system, the corresponding vessels were termed *coolers*, as being at a much lower temperature than that at which the sugar was boiled in the pans; but they are now called by an opposite name, because the sugar is here raised to a temperature of about 180° , having previously been boiled at 135° or 140° . While being raised to this higher temperature, the sugar is kept constantly stirred.

Recalling to mind what has been already stated, it will be seen that the sugar has been successively deprived of its solid impurities, its coloring matter, and



of some of the water which had been mixed with it; but the molasses (run) crystallizable parts of the sugar still remain. To separate these is the object of the next few processes technically termed, "filling out," "washing," and "netting."

The "fill-house," the part of the refinery which we next visited, presented a singular appearance. A considerable portion of the floor was covered with iron conical moulds, about two feet in height, and six inches in diameter at the largest part; each one placed with its apex downward, and upheld by those with which it was surrounded. Hundreds, and probably thousands of these moulds were thus ranged in close rank and file; some filled with sugar from the heaters, others in the act of being filled, and the rest empty, waiting to be filled at a subsequent part of the day's operations. These were the moulds which give the well-known sugar-loaf shape to the masses of white sugar seen at the shops of the grocers. Among the improvements which the business of sugar-refining has undergone, is the substitution of iron moulds for those made of clay: the latter used to be universally employed, but the former possess many advantages, and have almost superseded them.

A busy scene presented itself in the fill-house. A number of men, each stripped from the waist upward, were engaged filling the moulds with liquid sugar



from the heaters, each man carrying before him a large copper basin shaped somewhat like a coal-scoop, and capable of holding above a hundred weight of melted sugar. The men went to the heaters, filled their scoops with the hot viscid sugar, and walked, or rather ran, with a quick elastic motion, to the moulds, which they filled one after another with the sugar. Each man, as soon as he had exhausted his cargo, by filling three or four moulds, hastened back to the heaters, filled his basin again, and returned to fill other moulds. In witnessing this operation, it appeared strange that the men were not scalded by the liability of the sugar being spilled from the vessels; but practice enables them, by a peculiar spring of the body, to hasten along at a tolerably quick pace, without much personal inconvenience from the heated sugar. As it is important to have all the sugar poured into the moulds while in a certain state of temperature and granulation, a sufficient number of men is employed to fill-out all the contents of one sugar-boiling in about half an hour. When the moulds are filled, and the contents still in a fluid state, the surface is stirred and scraped round the edge of the sugar, to prevent any adhesion to the mould, and also to enable the small crystals which are forming to diffuse themselves equally through the sugar.

These moulds, then, contain sugar and syrup mixed up together, in a heated and viscid state; and in the fill-house they remain till the following day, in order that two effects may be produced, viz., the solidification of the sugar in the act of cooling, and the partial separation of the syrup from it. When these objects are to a certain degree effected, the moulds are taken, one by one, to the upper floors of the building.

While the sugar is being conveyed to the upper stories, we will imagine ourselves to have ascended the whole height of the building, and to have entered the washing and netting rooms. An extraordinary area of flooring is exhibited by these rooms. We have said that most sugar-refineries are lofty, and consist of a great number of stories, and we are now in a condition to see the necessity for this. Every mould full of sugar requires several days for its final completion; and thus each mould is in use so long, that a very large number is required for the purposes of the establishment, and many separate stories are necessary to contain them. In going from room to room, and from floor to floor, we saw repetitions of the same arrangements, viz., moulds ranged nearly all over the floor of the apartments, as thickly as they could stand.

We proceed to describe the processes which the sugar undergoes in these upper rooms. A small opening being made in the apex of each mould, the mould is placed in an earthen jar, where it is left for some time. During this period the syrup flows or drops out slowly, through the perforation, into a jar beneath. When this draining has proceeded to a certain extent, the mould is taken out of the jar, and the syrup, under the name of "green syrup," is emptied from each jar into one common funnel or pipe, by which it is conveyed down to the boiling-house. As this syrup still contains a portion of crystallizable sugar, it is boiled over again, with raw sugar, to

produce lump sugar of a rather inferior quality; and when all the crystallizable sugar is obtained from it, the residue becomes the well-known substance, *treacle*.

This draining, however, does not remove all the syrup from the sugar, a portion being still entangled among, and coating the crystals; and to separate this portion, the sugar is "washed" in rather a peculiar way. Formerly a process of "claying" was adopted. A stratum of fine white clay diluted with water being laid on the surface of the sugar, the water percolated through the sugar by its own weight, mixing with the syrup which yet remained in the body of the sugar, and washed it away through the orifice in the apex of the mould. By the modern improvements this porous surface, or sponge as it may be considered, is formed of sugar instead of clay. The solution of sugar is renewed from time to time, till the syrup is so thoroughly washed away as to leave the loaf of sugar in a beautifully white state. The process is now effected in one fourth the time which it used to occupy under the old system.

The quantity of syrup which drains from the apex of each mould is considerable. In the first place, there is the green syrup which flows as soon as the hole in the apex is opened; and afterward there are the finer syrups, resulting from the solution of fine sugar which is poured upon the loaf in the mould, and which carries off a portion of the good sugar with the molasses. The subsequent boiling and preparations of those syrups, in order to obtain the crystallizable sugar from them, is almost as important an affair as the refining of the original brown sugar. A curious scale of qualities is maintained in these circumstances. The finest syrup is mixed with other sugar, to obtain refined sugar of the same quality as that from which the syrup was obtained; the second quality of syrup assists in the preparation of sugar one degree lower in quality; while the coarsest or green syrup, produces a kind two degrees lower. Thus, the finest syrup is almost as pure as the sugar itself; while the coarsest syrup is so thoroughly exhausted of crystallizable particles, as



to be dismissed from the refining process and sold as molasses.

We return to the moulds. The face of the sugar in the moulds becomes rough and uneven, from the subsidence of the solid parts of the solution. When the washing or netting (*i. e.*, making the sugar neat, or pure) is completed, this face is made smooth. A man places the mould on its side across a stool, and scrapes the base or open surface of the sugar with a small instrument; a process which is called "brushing off"—an odd term, considering that no brush is employed.

The sugar is then allowed to remain a day or two in the mould, in order that the base may acquire hardness and firmness. A smart blow or two of the edge of the mould against a wooden post loosens the sugar within, and the loaf is turned out upon its base, after having lain in the mould several days.

The loaves are not, however, equally white all over when they leave the moulds, the parts near the apex being slightly damp and discolored at the surface. To remove this damp portion an ingenious machine is employed.



Three cutting knives or blades are ranged in a conical form, and made to rotate by the motion of a wheel; and the apex of the loaf of sugar being introduced into the cavity formed between these blades, the surface is shaved or sheared off, leaving the body of the loaf clean and smooth. Some of the larger and coarser lumps of sugar are not treated in this careful manner; but the damp apex is merely chopped off, leaving the lump as a truncated cone. The operation of shearing the surfaces of the loaves is termed "turning-off;" and the waste sugar obtained thereby is melted and clarified, and converted into the fine, clear solution which is poured on the sugar for the process of washing.

After the loaves have been left several hours, ranged over the floors of large rooms, they are taken up one by one, wrapped in paper, and placed in an oven or "stoving-room." The temperature maintained in this oven is about 140°. The loaves of sugar remain until they are thoroughly dried; after which they are taken out and wrapped in blue paper, in which state they are finished and offered for sale.

An extraordinary quantity of pipes and tubes of various sizes, traverse a sugar-refinery in every di-



rection. Some convey water from the well to the reservoir on the top of the building; others convey it to cisterns and pans in different parts; some conduct steam from the large boilers to the blow-up cisterns, to the pans, to the heaters, to the ovens or stoving-rooms, and to other parts; while another series convey the sugar and syrup from vessel to vessel, in different stages of their progress.

Thus have we rapidly gone over the routine of processes by which brown sugar is refined, and presented in the state of white crystalline sugar. In considering the advantages which result from any improvements in machinery or manufacturing processes, the first consideration generally is, how far the manufacturer is benefited thereby. But it is by no means unimportant to carry our inquiries beyond this point, and see in what way the improvements influence the retail purchaser. With regard to the refining of sugar, it is found that this refining is as perfectly effected by one series of processes under the modern system, as by a double series formerly; and the effect to the public is shown thus, that whatever be the price of brown sugar (and the fluctuations in this price involve political considerations which we do not wish to discuss in this place), the price of refined sugar is now only about twenty per cent. greater, whereas in former times it amounted to forty per cent.

We may here, perhaps, briefly explain the mode of reducing sugar to the state called sugar-candy. The process is not conducted at sugar-refineries, but is nearly as follows: when the cane juice has been clarified and boiled, it is placed in old moulds, having their lower ends stopped with linen, and crossed at intervals with strings or small twigs, to retain the sugar as it crystallizes. The moulds are then deposited in a cool place; and in proportion as the syrup cools, crystals are formed. In about nine or ten days the moulds are carried to the stove and placed in pots, and a small aperture made, through which the syrup can drop slowly. When the syrup has drained off, and the crystals of sugar-candy are become dry, the moulds are taken from the stove and broken in pieces to disengage the sugar, which adheres strongly to the sides of the moulds. By previously tinging the syrup

with cochineal or some other coloring substance, the candy may be made to assume any desired hue. The arrangement of the utensils used in this process is generally somewhat as follows: a stove is set apart, the entrance into which is on the ground floor, as near as possible to the pans; the top is usually from ten to fourteen feet above the ground, and covered like the top or crown of an oven. Beams are fastened into the wall, at a distance of about twenty-six inches from each other, and sufficient to bear a very large weight; upon which strong planks are laid when wanted. The candy-pots are placed upon the planks, and remain there till the process is finished. The pots are usually made of thin copper, without feet, and are perforated round the lower part with numerous holes, the purpose of which is this: a coarse white thread is drawn by a needle through a hole in one side of the pot, carried across to a similar hole in the other side, brought back again through a third hole; and so backward and forward, till the lower part of the pot is traversed by several lines of thread; after which the holes are stopped. Each string forms a nucleus, round which the candy crystallizes; an effect which used formerly to be produced by the use of small twigs.

COMETS.

As public attention has been directed to the subject by the appearance of one of these celestial bodies, it will not be out of place to state briefly what is known respecting them. The infrequency of their appearance is probably one reason that we are, for the most part, ignorant of their nature and design among the works of creation. They are supposed to be in many instances absolutely erratic; that is, not to be confined to any permanent orbit as the planets are. This, however, is not rendered certain. The orbits of one of the comets have been calculated and their return predicted, and the prediction has been verified by their actual reappearance. It has, however, been supposed that owing to their extremely elongated orbits, they often fall within the attraction of the fixed stars, and never find their way back again into our system. From this circumstance it has been by some regarded as not improbable that at some future day a comet may happen to be in the track of our earth as it passes, and the destruction of our planet be the result of the collision. When we consider, however, the smallness of these bodies in comparison with the extent of space in which they move, the probability of such a collision is reduced to the smallest fraction of possibility.

Of all the celestial bodies, there are none that have given rise to so many speculations and conjectures as the comets. Their strange appearances, in all ages, have been a matter of terror to the ignorant who uniformly have looked upon them as bad omens, and forerunners of war, pestilence, &c. Others, less superstitious, supposed them to be meteors raised in the higher regions of the air.

Some part of the modern doctrine concerning them, however, was received in the ancient *Italic* and *Pythagorean schools*, for they held them to be so far of the nature of planets, that they had their periodical times of appearing; that they were out of sight for a long time, while they were carried aloft at an immense distance from the earth, but became visible when they descended into the lower regions of the air, and thus were nearer to us.

Aristotle, however, maintained that they were nothing more than *meteors*, or exhalations raised into the upper regions of the atmosphere, where they blazed out for a while, and disappeared when the matter of which they were formed was consumed. Seneca, on the contrary, strongly argues against those who supposed them meteors, and declared his belief that they were not fire suddenly kindled, but the eternal productions of nature. He points out, also, the only way to come at a certainty on this subject, viz., by collecting a number of observations concerning their appearance, in order to discover whether they return periodically or not. "For this purpose," says he, "one age is not sufficient, but the time will come, when the nature of comets, and their magnitudes, will be demonstrated, and the routes they take, so different from the planets, explained. Posterity will then wonder that the preceding ages should be ignorant of matters so plain and easy to be known."

The prediction of Seneca, however, seemed for a long time, very unlikely to be fulfilled. The great authority which Aristotle maintained for many ages, determined them to be nothing but meteors, casually lighted up in the air; though they were manifestly at a great height, but subject to the diurnal revolution of the earth. In dark and superstitious ages, they were held to be the harbingers of every kind of calamity, and were supposed to have different degrees of malignity according to the shape they assumed; whence also they were differently denominated. Thus, some were said to be *bearded*, some *hairy*; some to represent a *beam*, a *sword*, or *spear*; others a *target*, &c.; whereas, modern astronomers acknowledge only one species of comets; and account for their different situations and distances from the sun and earth.

Long did astronomers maintain many absurd opinions concerning them. The first astronomer who placed them in their true rank in the creation, was Tycho Brahe, but the first who discovered their true motion was Sir Isaac Newton, from the observations he made on the great comet of 1680. This descended almost perpendicularly toward the sun, with a prodigious velocity; ascending again with a motion retarded, as much as it had been before accelerated. It was seen in the morning by a great number of astronomers in different parts of Europe, from the 4th to the 25th of November, in its way toward the sun; and in the evening, from the 12th of December to the 9th of March, following. The many exact observations made on this comet, enabled Sir Isaac Newton to determine that they are a kind of planets, which move in very eccentric ellipses; and this opinion is now considered as an established truth;

and further, that they are opaque bodies, deriving their light from the sun.

Comets are of very different magnitudes, which may be conjectured from their apparent diameter and brightness. The tails of comets have given rise to various conjectures; though it is acknowledged by all, that they depend on the sun in some way or other, as they are always turned from him, but in what manner this is accomplished we can not easily determine. Sir Isaac Newton was of opinion, that the *tail* of a comet is a very thin vapor, which the head sends out by reason of its heat. Bowring objects to Newton's theory, from the great velocity of the comet's motion; that of some of the comets is said to be after the rate of no less than 880,000 miles an hour.

Dr. Halley states that in passing through its southern node, this comet came within 440,000 miles of the orbit of the earth; and he remarks: "had the earth been then in that part of its orbit nearest the node of the comet, their mutual gravitation must have caused a change in the plane of the earth's orbit, and in the length of our year; and if so large a body, with so rapid a motion, were to strike the earth, the shock might reduce this beautiful frame to its original chaos." Modern observations, however, render these conclusions doubtful. The nucleus of this comet was computed to be about ten times as large as the moon, and its tail extended over a space 70 degrees in extent. To the near approach of this comet to the earth, Mr. Whiston attributed the deluge at the time of Noah. This supposition, however, is discredited by other astronomers. Halley's well-known comet appeared in 1682, and exhibited a tail 34 degrees in length. It reappeared in 1758, according to prediction, and again in 1735. A remarkable comet appeared in 1744. On the evening of January 23d, the diameter of its nucleus was nearly equal to that of Jupiter, and its tail extended above 16 degrees from its body. On the 12th of February, the tail was divided in two branches—the eastern 8 degrees long and the western 24 degrees, and it increased in length as it approached the orbit of Mars. At its greatest length it was computed to equal a third part of the distance to the earth from the sun. Its tail was visible for a long time after its body was beneath the horizon; two hours before sunrise. Another comet appeared in June, 1770, and was visible for a long time. Lexell ascertained that it described an ellipse around the sun, of which the greatest axis was only three times the diameter of the earth's orbit. Although much looked for, it has not since been seen.

Encke's comet was discovered at Marseilles, Nov. 6, 1818. Encke ascertained that it took only 1,200 days to travel through the whole extent of its elliptic orbit. It reappeared in 1828, '32, '35, and '38, and occupied the place assigned by the astronomer whose name it bears. It is very small, its light is feeble, and it has no tail. Gambart's comet makes its entire revolution round the sun in about 7 years. It was predicted that it would cross the plane of the earth's orbit on the 29th of October, 1832, a little before midnight, at a point about 18,480 miles within the orbit of the earth. It actually made its appear-

ance about the time specified, and created great alarm. Arago published a statement at the time to allay popular fear, showing that on the 29th of October, 1832, a portion of the earth's orbit might be included within the nebosity of the comet, but that the earth would not arrive at the same point of its orbit, until the morning of the 30th of November or more than a month after, and that consequently the earth would be 50,000,000 British miles distant from the comet. He adds that, "if the comet, instead of crossing the plane of the ecliptic on the 29th of October, had not arrived there until the morning of the 30th of November, it would undoubtedly have mingled its atmosphere with ours, and, perhaps, even have struck us." The earth is considered in more danger, if danger there be, from this comet and that of Encke, than from any other. Encke's comet crosses the orbit of the earth 60 times in the course of a century. The comet of 1807, was visible in the evening, and appeared to the naked eye, like a dim nebulous star, with a beam of light on one side of it.

The comet of 1811 is regarded as the most remarkable of modern times. The nucleus was 50,000 miles in diameter, and it was visible to the naked eye more than three months in succession. The greatest length of the tail on the 15th of October, is estimated at 150,000,000 miles. Its period of revolution is calculated at 3,000 years. Halley's comet was seen for the last time in 1835. It was visible to the naked eye, and the utmost extent of the tail was estimated to be about thirty degrees in length. Coruscations were observed in the tail. The appearance of this comet, says Dick, so near the time predicted by astronomers, and in position so nearly agreeing with those which were previously calculated, shows that comets are permanent bodies connected with the solar system, and that no very considerable change in their constitution takes place while traversing the distant part of their orbits.

With respect to the use of the comets in the universe, it is no more a question than that of any other orb, except it be to show forth the works of the Almighty in a more extensive point of view. They show, by their rapid motion, and the period of the revolutions of those which have been calculated, the vast extent of the starry firmament. With respect to their situation, whether belonging to the solar system, or as links that join systems, thereby keeping up a harmony or union of systems, seems more a consideration, and is perfectly consistent with the analogy and connexion that are found among objects, where the researches of human sagacity have been able to penetrate.

A comet exhibits three varieties, according to its position, as seen from the earth: 1, *bearded*, when eastward of the sun, and its light marches before; 2, *tailed*, when westward of the sun, and the tail or train follows it; and, 3, *haired*, when diametrically opposite to the sun, having the earth between them, and all its tail hid, except a few scattered rays.

But of all the comets on record, only four of their periods are known to any degree of certainty. The first of these appeared in 1532, 1607, and 1682, making a period of seventy-five years. The second

appeared in 1532, and 1661, being a revolution of one hundred and twenty-nine years. The third, and most noted of all the comets yet observed, is that before-mentioned, which appeared in 1680, and its period was calculated by Sir Isaac Newton to be 575 years; therefore it may be expected again in 2,255. This comet, at its greatest distance from the sun, is about 11,200,000,000 of miles; and at its least distance from the sun's centre is only 49,000 miles, being only about one third of the sun's semidiameter from his surface. In that part of its orbit nearest to the sun, it flies at the amazing rate of 880,000 miles in an hour, as observed above; and the sun, as seen from it, appears forty thousand times larger than he does to us. The astonishing length that this comet runs out into empty space, suggests to our minds the vast distance of the fixed stars, and hence of the universe, where regions appear beyond regions. However difficult to narrow minds like ours, to find out the destinations of these orbs, this is an undoubted truth, that wherever the Deity exerts his power, there he also manifests his wisdom and goodness.

The first comet on record was observed by Nicephorus Gregorius, of Constantinople, in June, 1337, whose course he describes very accurately.

Comets do not all move from west to east, like the planets. Some have a direct, and some a retrograde motion. Their orbits are not comprehended within a narrow zone of the heavens, like those of the principal planets; they vary through all degrees of inclination. There are some whose plane is nearly coincident with that of the ecliptic, and others have their planes perpendicular to it. Indeed, a slight inclination of the orbit is no longer deemed an essential characteristic even of the planets, for the small planets lately discovered have great inclinations. It may be remarked, also, in this connexion, that the orbits of the satellites of *Uranus* are nearly perpendicular to the ecliptic.

It is further to be observed, that the *tails* of comets begin to appear as the bodies approach near the sun, their length increases with this proximity, and they do not acquire their greatest extent till after passing their perihelion. Their direction is always to the sun.

"In all the works of the Deity," says Dick, "we must admit that his goodness is displayed, although we may not be able to trace the mode of its communication; for we may lay it down as an axiom, that whatever wisdom and omnipotence are exhibited throughout the Divine economy, there is also a display of beneficence, which appears to be one prominent design of all the works of God. Comets have long been considered as objects of terror; but there can be no question that they are as intimately connected with a system of benevolence, as are the solar radiations and their benign influence on our globe and on the other planets.

"It has been conjectured that comets may supply moisture to the other planets, and invigorate the vital principal of our atmosphere; that they may recruit the sun with fresh fuel, and repair the consumption of his light; or that they may be the agents for dispersing the electric fluid through the planetary regions; and although there is little probability that

such conjectures are accordant with fact, yet it may be admitted that comets may produce a *physical* influence of a beneficial nature throughout the solar system. But what I conceive to be one of the main designs of the Creator in the formation of such a vast number of splendid bodies is, that they may serve as habitations for myriads of intellectual beings, to whom the Almighty displays his perfections in a peculiar manner, and on whom he bestows the riches of his beneficence.

"Whatever may be the intention of those comets which are destitute of a nucleus, this, in all probability, is the chief design of those which are large and which are invested with a solid nucleus; and the same arguments brought forward to prove that the planets are inhabited, might be adduced in proof of the inhabitation of comets. If this position be admitted, then we ought to contemplate the approach of a comet, not as an object of terror or a harbinger of evil, but as a splendid world, of a different construction from ours, conveying millions of happy beings to survey a new region of the Divine empire, to create new scenes of creating power, and to celebrate in loftier strains the wonders of Omnipotence. Viewing the comets in this light, what an immense population must be contained within the limits of the solar system, which gives room for the excursions of such a vast number of these bodies! and what an incalculable number of beings of all ranks must people the wide extended universe!"

JOHN JACOB ASTOR.

THIS individual is a living example of what industry, perseverance, and determination, will do, when their aim is directed toward a single object. Of humble origin, without education, industry, "go ahead industry"—has won him a fortune far superior to that of any individual in our own country, and exceeded by few in any other.

John Jacob Astor is a native of one of the German provinces on the Rhine: his age is nearly eighty. He arrived in this country soon after the revolutionary war, in a Hamburg trader, commanded by Captain Clark, a well known ship-master of the time.

His first employment was in a fur or skin store, at low prices. Little could the poor young German at that day, have imagined he would become the lordly possessor of the whole blocks that he daily traversed on his slavish rounds, or that for the single package of furs he carried he should be the owner of more bales of rich heaver than it contained skins—that he should own more bank stock than all the banks in the country then contained—and that ships from every quarter of the globe, laden with the richest products should all be his property. It was so to be.

Mr. Astor having acquired, by frugality and economy, some little capital, became a speculator in skins in a small way, purchasing a little lot here and there—matters too trivial for the large dealer—and when he had accumulated something of a lot, sold them for *cash* to the wholesale purchaser, invariably realizing handsome profits.

"Large streams from little fountains flow,"

the poet says, and Mr. Astor is a true illustration of the line. His small beginning soon amounted to a large sum, and he shortly took his proper rank among the principal fur merchants of the city, and was looked upon as shrewd, enterprising, and wealthy. His payments were prompt; short credit was his motto, and he fulfilled and exacted it with all.

As time rolled on, his capital became increased to such an enormous extent that he found it necessary to make other investments to prevent it from being idle. A portion he invested in city property, then of little value, but now worth millions; but the principal part he invested in a new enterprise, by establishing the American Fur Company, of which for many years he was the chief owner. This company had its agents and hunters in the far west, among the remote Indian tribes, scattered over our then sparsely settled territories, who traded with the aborigines for all the furs and skins they took in a season. These articles were shipped to New York, whence they were sent abroad. By this trade, the company realized immense profits. Mr. Astor also engaged extensively in the China trade, making sometimes what would be considered by most people a fortune at a single voyage.

Just before the war, he conceived the project of making a settlement on the northwest coast, or what is now called the Oregon territory, for the purpose of making a general depot for the furs purchased in that region, and whence his ships, after completing their cargoes, could sail direct for China. This settlement called Astoria, proved unsuccessful; the natives capturing the ship which he had fitted out for the purpose, and murdering almost every soul on board.

Mr. Astor's name had now become familiar throughout the commercial world. It was known and recognised in Europe, India—in fact, everywhere that commerce existed. His credit was without bounds.

It would be mere recapitulation to mention the various enterprises of Mr. Astor. They all relate to commerce, and all resulted in filling his already heaped-up coffers. Some fifteen years ago he went to Europe, where one of his daughters, a woman of great piety and worth, married a German count. She has since deceased. Mr. Astor was absent two or three years.

He sold out his interest in the fur company some years ago, and has retired entirely from commercial affairs. His son, William B. Astor, has now the chief management in the investment of his vast property on bonds and mortgages—a business which requires the constant employment of numerous agents and clerks.

It is said by those who have the best opportunity of knowing, that he has left in his will, a large sum for the purpose of erecting a public library. We trust this is the case. The splendid hotel known as the Astor House is now the property of his son William. John Jacob has two sons, besides several daughters, and numerous grandchildren. He seldom goes out, except in fine weather, and his health is feeble. His fortune is variously estimated at from fifteen to TWENTY-FIVE MILLIONS OF DOLLARS.



Presentation of Moses to Pharaoh.

CHARACTER OF MOSES.

Moses was one of those few privileged individuals who have had the ability and the opportunity to stamp the character of their own minds upon the age in which they lived. It may be said of him with much more truth than it has been said of another, in modern time, that—

"The ebbs and the flows of his single soul
Were tides for the rest of mankind."

The inspired writer spoke without a metaphor when he said, "there arose not a prophet since in Israel like unto Moses."

Samuel indeed, shared largely in his illuminations, and possessed correct conceptions of the Theocracy; but Samuel failed in power. He could not raise up the fallen state even to his own idea of what a com-

AUGUST.

37

monwealth should be. David possessed great refinement and Christian sensibility; he entered more deeply perhaps than any of the ancient saints into the hopes, and fears, and trials of experimental piety. But even David could throw no permanent safeguard around the Mosaic Laws. The wisdom of Solomon passed "not the luxury of an idolatrous court;" and thus all the great interests of the state were endangered. Elijah had the energy of Moses; he was a bold reformer, like the fire and the wind, he rushed upon the wide spread idolatry of Israel. But his violence was soon spent. He wanted patience to endure. He failed to stamp permanently upon the fallen mind of the nation his own correct views of God and true religion. Moses, however, seems to have combined in his own wonderful character all the excellences of the kings who came after

him, without partaking of their defects. His history, therefore, is replete with instruction. Let us consider, in the first place, the circumstances of his early education, as illustrative of a special providence.

Had the mother of Moses, as with many a prayer she wove the frail bark that was to bear her infant, not to a watery grave, but to the arms of a princess, been able to look along the future, and trace the connexion of events, as they all conspired to accomplish the designs of God, with what astonishment would she have discovered that God brings forth from the most minute event, and by a thread the most slender and yet most complicated, the wonderful products of his wisdom and his power.

Was it anything else than a minute and special providence, that gave a direction to the floating babe, guiding the current on which it was borne, and every eddy in which it was whirled around, weakening the resistance of every twig that caught it, and every obstacle that opposed its progress, until it was safely placed in the arms of the daughter of the very king whose people held its own in bondage? Was it anything else than a special providence that restored this now adopted son of an Egyptian princess to the arms of its own fond mother, that it might draw from the same source whence it drew its life, all the partialities and prejudices, and early education of a Hebrew? Was it chance, or the finger of God that brought it from the Hebrew cottage, to be educated in the court of Pharaoh; and to become learned not only in the secret knowledge of the priests, but in the political organization of the country, and in all the wisdom of the Egyptians? Was it, or was it not a special divine interference that just at the time when Egypt was no longer useful to him, Moses should be transferred to the deserts of Arabia, to complete another and equally essential part of his education? The very region which is afterward to become the scene of his plans and his anxieties, first becomes the quiet residence of his riper manhood. In this way he makes himself familiar not only with the habits and customs of that kind of life which he was so soon to lead, but also with those tribes which were kindred to his own people. And that by means of his *first school* in his mother's arms, and his *second school* in the court of Pharaoh, and his *third school* in the Arabian desert, he formed a character fully adequate to the great enterprise which he was called to undertake.

We introduce these facts for the purpose of connecting them with a most important practical remark. We see distinctly that God can control the minutest operations of a material universe without the least infringement of the laws of mind. To a passing observer who may have stood upon the banks of the Nile, there was nothing unusual in the motion of the current that bore along the floating ark. And that eddy which whirled it round, and would have thrown it on the sand, had it not taken one turn more, and that twig which caught it but soon let go its hold, presented no unusual movement; all was natural. And so of every intelligent being that was engaged in the whole transaction. Each act was voluntary,

each act was clothed with its appropriate responsibility. Admit these two great facts, first, that God can control the universe of matter, without any visible infringement upon the uniformity of nature, and secondly, that he can control the universe of mind, without any actual infringement upon the freedom of mind, and you have laid the foundation of some of the most cheering doctrines of revealed religion. Here rests the doctrine of a minute and universal providence. Here, too, is the foundation of prayer. We love to believe in the doctrine of a special providence. The idea of the infinite and perfect God, governing the entire universe through the medium of laws which he himself established, and which he does not violate, is delightful; and the more so from the fact, that at the present day, "there is actual danger that the Creator himself should be legislated out of his own world, and an abstract principle be made to usurp the throne of the Maker of heaven and earth." We refer not here to the cold creed of the naturalist, who sees nothing on earth but combinations of matter, and nothing in the heavens but figures and solids. We refer to the philosophy which almost deifies the laws of nature; a philosophy which maintains that Jehovah, after having once created this fair system of nature, and having impressed upon it certain laws, gave it up to the regulation of these laws, and threw it off from his special care, to roll on in its movements, uncheered by his presence and uncontrolled by his constant agency. Rather than adopt speculations so cold and heartless, we would prefer the superstition, that sees an angel in every flower, and hears his voice in every wind; that sees God enthroned on every cloud; that finds for him a dwelling-place in every mountain-height, and in every shady grove. But it is no superstition to see "a God employed in all the good and ill that chequer life." It is not a superstition to enthrone God on all the agencies, visible and invisible, that fill the universe. We love to take the precious promises of his word, and carry them through all the labors and scenes of a Christian life. We love to say to the afflicted saint, even in the hour of his deepest gloom, "all things shall work together for good to them that love God." Infinite wisdom, boundless love and power are pledged to connect the darkness of the present with the brightness of the future. And when kneeling by the couch of pain and sickness, who would not wish to feel that there is a God who hears prayer, one who without any infringement of the laws of mind, can give wisdom to him who prescribes for the sufferer, so that he shall be able to detect the disease, and happily adjust the remedy, and without any infringement of the laws of organic life, but operating through these laws, can impart efficacy to the medicine, and raise up the sick to health. And when all human power fails, and death comes in to seize his prey, how cheering to know that the eye of God is on the weeping circle that are left, and that, in perfect consistency with human freedom and human accountability, he can bind up the broken hearted, and give the "oil of joy for the spirit of heaviness."

But we must return from this digression, and call

your thoughts again to the extraordinary individual, whose early history we have now considered.

The wonderful attributes of his mind are most fully developed in the civil and religious institutions which he established. His views of civil government were nearly four thousand years in advance of his age. In his institutions are found all the elements of a republic. The theocracy was founded upon the principles that the laws should govern; that a free people should adopt their own constitution of their own free will; that all arbitrary power, caprice, and oppressive domination, should be excluded; and that the governing principle should be vested in national laws above the reach of arbitrary will. The tribunals of justice were held in public. The law of God dictated the punishment, and no judge could grant a dispensation. The great principle of obedience which ran through all the commonwealth, which was in fact the grand element in their national character, and the grand impelling principle of all public and private action, was the glory of Jehovah, their invisible king. He sat enthroned in the national temple. The tabernacle was the palace of God. All the tribes were united together as one family in his service and his worship. They heard his voice from the mercy-seat. They saw the emblem of his presence in the pillar of cloud and of fire which rested upon the tabernacle. And whenever they met the high-priest, the Urim and the Thummim, the sacred lot of God shone brightly on his breastplate. Thus everything was connected with Jehovah their king. The whole structure of this civil constitution combined the essential features of a perfect government. *It was free.* The people voluntarily adopted their own constitution, and selected their own magistrates on the principle of representation. Thus they were bound, not by fetters of iron, but by a free spirit of obedience to the ruling power.

It was an energetic government.—The laws were regarded as solemn conventional rules, which no one might venture to transgress. They were enforced by appropriate and powerful sanctions.

It was a government free from oppressive distinction.—There was no hereditary and privileged class, who possessed any executive or despotic power. Every important enterprise was committed to the elders of the whole people, and even parents in their highest authority were only counsellors.

And if from the civil, we turn to the religious institutions of Moses, we shall find everything in perfect accordance with his elevated and spiritual views of God. Compared with the artificial and unmeaning machinery of idolatrous worship, his ritual was simple and sublime. How interesting the idea of a moveable palace for their lawgiver and king, that he might dwell perpetually with his wandering people. The ark which contained the law was the throne of their guardian God. And how sublime the conception to enthrone the Almighty Lawgiver upon the tables of the law. In front of the throne were the seven burning lamps, the symbol of omniscience; and also the golden altar, from which clouds of incense ascended as the emblem of prayer. But there was nothing here that bore the least resemblance to

superstition. Nothing that had even a distant tendency to idolatry. In regard to offerings and purifications, while he adopted that system which was better adapted, than any abstract teaching, to impress truth upon the mind in that early age, he at the same time aimed the whole against those idolatrous practices to which his people were constantly exposed. Thus did he aim, by the very means which imparted to them spiritual knowledge, to eradicate all remains of idolatry from their hearts. What is there in his whole system of laws, but a most ancient, as well as beautiful model, preserved in a written form, where health, morals, political organization, and the worship of God, are all combined in one harmonious and wonderful system. And all this, too, was accomplished in an age when idolatry was almost universal; an age when its loftiest intellect bowed down to the sun, and the moon, and the host of heaven; in an age when the most refined, as well as the rude, were devoted to the worship of beasts, and birds, and creeping things. And which is the greater miracle, that such a man should exist *unaided and alone*, in such an age, or that his mind should be illuminated by divine inspiration, and his whole character formed by a special divine influence, for the great work which he had to perform? It is impossible to account for the existence of such a man as Moses, in that age of the world, on any other supposition, than that God was with him. His character affords incontestable evidence of the divine origin and authority of the dispensation of which he was the head.

But let us look at the development of his character amid the difficulties which he had to encounter. Afflictions try the character, and most severely was the Jewish lawgiver put to the test. Look at the task which he was commissioned to perform. He was to rescue a stagnant mass of mind, not only from Egyptian servitude, but from the more degrading bondage of Egyptian idolatry and superstition. They were too cowardly to meet a foe; and yet he was to lead them up to the conquest of their ancient possession. They were too effeminate to encounter danger; and yet he was to lead them through a waste, howling wilderness, beset with famine, disease, and death. They were incapable of any lofty thought; and yet he was so to cultivate and refine their national character, that they should become proper instruments for the great designs of God. From these uncouth materials he was to form a depository for the scriptures of truth, in which the successive revelations of God might be protected from the assaults of idolatry, and from which there should flow down to the remotest age, the pure blessings of spiritual truth and a spiritual religion. And now what attributes of mind, what energy, what courage, what enlarged views, what judicious calculations, what a spirit of untiring activity and ceaseless invention, must belong to the man, who, in a barren desert, and in a remote and idolatrous age, could control, and cultivate, and soften a rebellious multitude of three million souls? Most nobly did he accomplish his work. And as we follow him on in his triumphant course; as we behold him surmounting one difficulty only to meet another, and never loosing, with a single exception,

the collected energies of his mind, and never failing in the skilful adaptation of his plans, we hardly know which to admire most, his enlarged and comprehensive views as a statesman, his skill as a leader, or his meekness, humility, and faith, as a Christian.

As we draw toward the close of his eventful life we behold him still engaged, to the last moment of his earthly career, in the great object for which he had suffered so much, and labored so faithfully. Warned by God that the hour of his departure was at hand, he began to impart to the people what may be called his dying counsel. His great desire was that the knowledge and the worship of the true God might be preserved among them after his death. To secure this, he wrote for them an earnest exhortation, exhibiting not only the masterly power of his mind, but the best traits of his heart. These exhortations, which comprise the book of Deuteronomy, he gave to the magistrates as his farewell address. Then, like the dying patriarch before him, he cast a prophetic view into the future, and in words of golden richness took leave of his people in one of the most affecting and instructive strains of prophecy that can be found in the scriptures of truth. 'The faithlessness of an undeserving people is now forgotten, and he mingles encouragements as well as admonitions in his last prophetic benediction. The official duties of Moses were now closed. He conjured Joshua, as the divinely appointed military leader, to conquer the country. He delivered up to the priests the book of the law; and after surveying from the heights of Pisgah the promised land, which he was never to enter, this great man, and distinguished servant of God "was gathered unto his fathers."

How full of instruction is such a life !

Moses affords a fine illustration of the dignity and the elevation which religion imparts to the human character. It was the union of a sanctified heart with great ability of mind, that distinguished him from the mass of his countrymen. How erroneous is the impression that genuine piety of heart is a mere refuge from danger ! How derogatory to religion, is the feeling that we would gladly dispense with it, in our intercourse with the world, did we not know that we shall need it in death ! 'There is not a nobler sight this side of heaven, than a human heart resplendent with the grace of piety. The sun may conceal his beams ; and the evening sky may blush for the stars that shine in it ; but never let the Christian be ashamed of his religion.

The history of Moses shows us how it is that we can invest the frail period of our lives with true and permanent value. Various are the means which men employ to perpetuate their remembrance on the earth. But it is only in the influence that we have exerted, that we shall live in the remembrance of others after we have ourselves left the earth. The man who bequeaths to the world the rich legacy of a Christian influence, erects his memorial in the love and gratitude of all holy hearts. It matters not what was the country, or where was the home of such men as Oberlin and Brainerd, they may have lived in a palace or a cottage ; but they have linked themselves to the hopes, and the joys, and the affec-

tions of the children of God ; and the blow which severs such ties as these must destroy the soul itself.

And finally, how forcibly are we reminded by the history of Moses of the exhortation of the apostle. "Let us therefore fear, lest, a promise being left us of entering into his rest, any of you should seem to come short of it" through unbelief.

VEGETABLES, in their growth, derive all their food from the mineral kingdom, principally from the air, which had been called a gaseous mineral ; while animals derived their principal nutriment directly from the vegetable kingdom. Vegetables effected many chymical changes in the food they took up, animals few. Gluten and albumen are the nutrient principles of plants, and in chymical composition they are identical with the albumen of the white of an egg, of the muscle of an ox, or the blood of a sheep. By identity was not meant similarity, but positively the same thing. The albumen of blood, of muscle, and of an egg, differed in physical, but not in chymical characters.

Plants, in fact, contain within them the flesh of animals, and all the animal organization does in nutrition, is to put this flesh in the right place. But animals take up with their food other constituents of plants which contain no nitrogen ; such as starch, sugar, gum, &c. These are not nutritive principles ; they do not assist in making the flesh of animals ; and when animals are fed on these alone, they die. But animals possess a certain degree of heat, and their bodies have generally a temperature above that of the atmosphere—about 100 degrees of Fahrenheit's thermometer. Whence then comes this heat ? From the burning of the sugar, starch, gum, &c. The air that animals respire is carbonic acid, the very gas that is produced by the burning of wood or charcoal in a fire. Charcoal is carbon, and animals take in daily a large quantity of carbon in their food. It is the burning or combustion of this substance in the body that produces animal heat. In hot countries, animals on this account take less carbon. The food of the East Indian contains only about 12 per cent. of carbon ; while that of the Greenlander contains 70 per cent. The depraved taste of the Greenlander, who drinks train-oil, and eats tallow candles by the dozen, might be pitied or wondered at ; but it is necessary to his healthy existence. Another reason for animals acquiring carbonaceous food in cold climates is, that the air is more condensed, and the same measure contained a greater quantity of oxygen ; that gas being the agent which, by uniting with the carbon, and forming carbonic acid, gave out the heat. Strong exercise also demands a large supply of carbonaceous food, on account of the oxygen taken in during the hard breathing thus produced. Oxygen, when once taken into the system, never escapes uncombined, and would destroy the whole fabric of the body unless a fresh supply of material was given. Clothes, by keeping in animal heat, rendered less carbonaceous food necessary in order to keep the body up to its proper temperature.



THE PLEASURES OF THE COUNTRY.

"But who the melodies of morn can tell?
The wild brook babbling down the mountain's side;
The lowing herd; the sheepfold's simple bell;

The hum of bees, and linnet's lay of love,
And the full choir that wakes the universal grove."

I AM never so happy as when I am strolling on the bank of some clear and beautiful stream in a fine spring day: the scenery, the birds and flowers, all add to my pleasure. I like to see the "glittering streamlet play," and to hear "the prattle of the purling rill," as Thomson calls the sound made by a brook as it passes over a bed of pebbles—

"The little brook
That o'er its flinty pavement sweetly sung."

No one appears to have appreciated the charms of the country more than Horace. In his beautiful ode in praise of a country life, he details the pleasures to be derived from it, in a manner which shows how capable he was himself of enjoying its attractions. He describes how happy the man must be who cultivates his own land, prunes and engrafts his fruit-trees, or sees his lowing cattle in some lonely vale, and stores his honey, and shears his sheep, and gathers in his fruits.

I am apt to dwell on the charms of the country, because so much of my own happiness is derived from it, and because I am persuaded that so many others might enjoy the same pleasure. The mere act, however, of living in the country, will not be sufficient; there must be a decided fondness for the occupations it affords: visiting the cottages of the peasantry, and relieving their wants, is one of these.

The cultivation of flowers should not be neglected, as it is another of the resources which make a country life agreeable, and affords a pleasure which is not only inexhaustible, but is one of the most fascinating kind. To this may be added the study of natural history, which alone is sufficient to keep the mind employed, and prevent the day from becoming dull or tedious. It is a study also calculated to make us wiser and better, as the more we contemplate the works of creation, the more reason we shall have to entertain a deep sense of Almighty power and goodness:—

"For God is paid when man receives—
To enjoy is to obey."—POPE.

Those persons to whom the employment of their minds is irksome, and who gradually lose their intellectual powers, because they will not take the pains of exerting them, will be incapable of appreciating the pleasures and benefits to be derived from a well-regulated life, passed in the country. Those, however, who are willing to try the experiment, may be assured that it will be their own fault if their time is not both usefully and agreeably employed: they will become cheerful and instructive companions, kind and humane in their dispositions, and have their moral character improved and made more fit for that great change which, sooner or later, must happen to us all.

I can not refrain from quoting what an elegant writer has said on the subject in question:—

"We are affected with delightful sensations when we see the inanimate parts of the creation, the meadows, flowers, and fields, in a flourishing state. There must be some rooted melancholy at the heart,

when all nature appears smiling about us, to hinder us from corresponding with the rest of the creation, and joining in the universal chorus of joy. But if meadows and trees in their cheerful verdure—if flowers in their bloom, and all the vegetable parts of the creation in their most advantageous dress, can inspire gladness in the heart, and drive away all sadness but despair; to see the rational creation happy and flourishing, ought to give us a pleasure as much superior as the latter is to the former in the scale of beings. But the pleasure is still heightened, if we ourselves have been instrumental in contributing to the happiness of our fellow-creatures—if we have helped to raise a heart drooping beneath the weight of grief, and revived that barren and dry land, where no water was, with refreshing showers of love and kindness."

Under almost every circumstance of disquietude or of solitude, alone in one's room, or wandering far away from the haunts of mankind, a lover of Nature has always something around him not only to occupy his thoughts, but to afford him gratification and pleasure. When I say pleasure, I mean that pleasure which arises from the occupation of the mind when devoted to a delightful study, and which cheers us with the conviction that our time is not unprofitably spent. As we proceed in the contemplation of the works of Nature, her beauties are gradually unfolded to our view, as if she were pleased that her works had excited our wonder and admiration; the study of them is, indeed, unbounded, for the objects she presents to our notice are infinite, unceasing, and delightful.

I was pleased at an observation made to me lately a nurseryman. He said that he thought it impossible that any one could entertain atheistical notions, who studied the nature of plants, and observed the different uses for which they were designed by a benevolent Creator, according to the nature of the different climates in which they are found. He showed me the pitcher-plant, which flourishes only in very hot countries. Its tube is about as long again as the bowl of a tobacco-pipe, and is filled with an aqueous fluid. This supplies water for birds, and is admirably adapted for the purpose. The cactus tribe grow in hot sands, and afford both food and water, and we generally find that, according to the wants of man and animals in different countries, food best adapted for their use is bountifully supplied.

There is an extreme sensibility in the tendrils of vines, and they afford another proof how admirably Nature has adapted everything to fulfil the purpose for which she designed it. Without this extreme sensibility of the tendrils, the vine would fall to the ground, and its fruit would not ripen. As the shoot grows, the tendrils are thrown out, and at the end of each there is a little hook. As soon as this fastens upon anything, the tendril twists itself about it, turning round and round, till it has completely contracted itself. The moisture which occasioned its flexibility then recedes, and it becomes hard. Its tenacity is then so great, that it requires some effort to disengage it. The first two tendrils which the

branch, or shoot of a vine throws out, are, I observe, much stronger than the subsequent ones.

I watched this summer the shoot of a vine, which came across one of the windows of my house. At first only two strong tendrils appeared. The second came in contact with the glass, and though it had nothing on which it could lay hold, its mere friction against the glass occasioned it to distort itself till it became like a piece of knotted twine. The other tendril had nothing which it could touch, but I observed that it altered its position every day, turning itself about, as if seeking for an opportunity of fulfilling the use for which it was designed. If I held a stick against it for a short time, it was evidently affected by it, and this was seen by a change in its previous position.

These details may appear trifling, but I can not consider them as such. They are facts and circumstances in the economy of Nature which prove that nothing was made by chance, or for ends not "admirable."

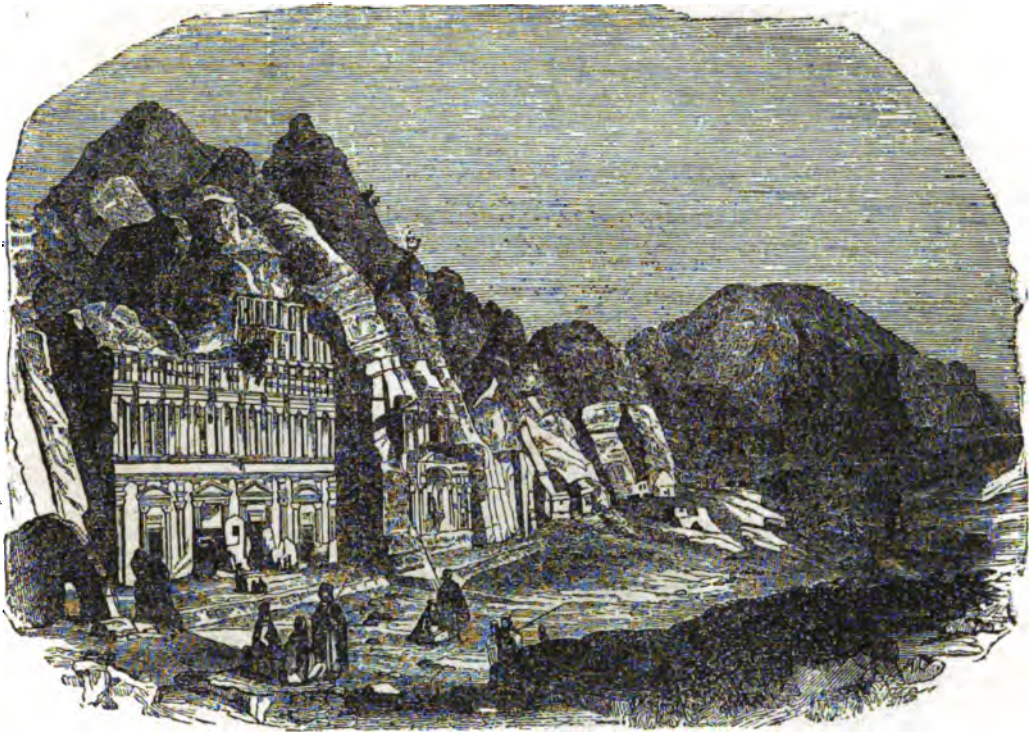
Vines which are not trimmed till March, bleed much, and will continue to do so until the leaf is fully expanded. It is remarkable, that, although this is the case while the trees are leafless, yet lop them as much as you please when the foliage is out, and they will not shed one drop. Dr. Hales was not acquainted with this circumstance when he cut off a large bough from his vine late in the spring, and it was fortunate for science that he was not. His solicitude for his vine, and his various attempts to stop the effusion of the sap, led him, step by step, to many expedients, which, by degrees, brought on abundance of curious experiments, and ended in that learned publication known by the name of *Vegetable Statics*. This work has done much honor to its author, and has been translated into many modern languages.

The culture of Virgil's vines corresponds very exactly with the modern management of hops. For instance, in the perpetual diggings and hoeings, in the tying to the stakes and poles, in pruning the superfluous shoots, &c., and the alleys between the rows of hops are harrowed sometimes with a small triangular harrow, drawn by one horse, and guided by two handles.

It is interesting to compare the customs of the ancients with those of modern times. Cottagers are in the habit of striking a brass pan, to make a noise when their bees are swarming. So it was when Virgil wrote his fourth Georgic,—

"And ring the tinkling brass, and sacred cymbals sound."

A CURIOUS FACT.—The whole population of the United States could be compressed into the space of one mile square, and each individual be allowed sufficient room to breathe in. Fifteen inches square would suffice for this. There are 1,760 yards in a mile which being multiplied, gives 63,360 inches; and this product divided by fifteen the number of inches of space occupied by each individual would place 4,224 of them in a row to extend the length of a mile; and the same number of rows to complete a square mile would consequently number 17,842,576.



JOKTHEEL.—A View of Petra in Wady Mousa.

PETRA, OR SELAH.

SELAH means "a rock;" and as the Greek name for the chief town of the Nabathæan Edomites, Petra, has precisely the same signification, it is, not without reason, conceived by some writers that the town which the Greeks knew as Petra is identical with the Selah of Scripture. We rather incline to this opinion, which has also the strong support of Eusebius and Jerome, who both described Petra as "a city of Arabia, in the land of Edom, *which is also called Jectael*." It is true that in the Hebrew text, the word, in this and other places, may be read as an appellative rather than a proper name, and is so read by the Septuagint and Vulgate (but not the Syriac and Arabic); but as the versions, particularly the Septuagint, often turn the significant proper names of the Hebrew into appellatives, we are not disposed to lay much stress on this; and even did we allow that Selah is an appellative, it would be open to us to contend that a place so emphatically indicated as *the rock* was most probably the same which is allowed to have borne a proper name of the same import. In other words, a place distinguished as *the rock* is the most likely to be that to which the proper name of the same meaning, whether Selah or Petra, would be given. This will be allowed by any one who considers the universal process in topographical nomenclature, under which distinguishing appellatives become, in process of time, fixed as proper names. However, as we are not willing to raise an argument on the question, whether such a word is to be understood as a proper name or an appellative, we are

content with the probability, in connexion with the other and stronger probability that the chief town of Mount Seir, even if not expressly named, is at least indicated and referred to in the history and prophecy of the Old Testament. In their denunciations against a country, the prophets continually refer to its chief town; and unless there was an exception in this instance, they did so in their copious prophecies against Edom. Now the chief town of Edom was Petra; and as the prophets who foretold its doom were not long posterior to the date of the transaction recorded in 2 Kings xiv. 7, it becomes probable that the present history has the same principal city of Edom in view; particularly when we find it bearing a name analogous to that which the metropolis of Edom certainly bore. We consider it certain that the prophecies relate to Petra, and will endeavor to show that the passage referred to above has a reference to the same place by stating the question "Where was Petra?"

This is a point concerning which it is necessary to have a distinct understanding; for if the Idumean town to which the Scriptures refer be not the excavated city of Wady Mousa, near Mount Hor, we lose much of the force of that satisfactory and beautiful evidence to the divine authority of the sacred writers which may be deduced from the complete correspondence of their predictions with the existing condition of Edom. This correspondence has been only lately discovered; and, as something new, it has engaged more attention than old truths, however valuable, would have been likely to obtain. The Christian world is under great obligations to Dr.



ROCKY VALLEY IN THE VICINITY OF PETRA.

The entrance to a Tomb is shown on the Left, and the Remains of an Amphitheatre in the Distance.

Keith, for his services in tracing and illustrating this coincidence.

Two places have been made to contend for the distinction of being the ancient Petra. One is the existing town of Kerek, about twenty-five miles due east from the southern bay of the Dead sea, the other is the forsaken and desolated city in Wady Mousa, near Mount Hor. The conditions of the question are rather peculiar. No one now denies that the city in Wady Mousa was Petra. The very learned editor of Burckhardt's "Travels in Syria," has proved this from the concurrent testimony of ancient writers; but, unfortunately, the same accomplished geographer has taken up the opinion, that, previously to the time of the Macedonian conquests, the present Kerek was Petra and the principal town of the Nabathæans, and this consideration will of course exclude the Petra of Wady Mousa entirely from the cognizance of the sacred writers, the canon of Old Testament Scripture having been closed considerably anterior to the appearance of the Macedonians in Asia. Our wish is, therefore, to disprove this position. To do so with completeness would require a lengthened dissertation, which would scarcely interest the readers of our Magazine; but we may state a few brief considerations which will, we think, reduce the probabilities which seem in favor of the conclusion to which we are opposed. We have repeatedly read with great attention the statement on the subject, which we find in the preface to Burckhardt, but have failed to discover that any one authority is cited in proof that Kerek ever was called Petra in ancient times. The only passage bearing an aspect of proof

is the following: "When the Macedonian Greeks first became acquainted with this part of Syria, by means of the expedition which Antigonos sent against the Nabatæi, under the command of his son Demetrius, we are informed by Diodorus that these Arabs placed their old men, women, and children, upon a certain rock (*ἐν τινὶ πετρᾷ*), steep, unfortified by walls, admitting only of one access to the summit, and situated three hundred stades beyond the lake Asphaltitis. As this interval agrees with that of Kerek from the southern extremity of the Dead sea, and is not above half the distance of Wady Mousa from the same point; and as the other parts of the description are well adapted to Kerek, while they are inapplicable to Wady Mousa, we can hardly doubt that Kerek was at that time the fortress of the Nabatæi; and that during the first ages of the intercourse of that people with the Greeks, it was known to the latter by the name of Petra, so often applied by them to the barbarian hill posts." After this, the able writer we are citing goes on to refer (for no proof is adduced) that subsequently, when the effects of commerce required a situation better adapted than Kerek to the collected population and the increased opulence of the Nabatæi, the appellation of Petra was transferred to the *new city* at Wady Mousa. But ultimately, when the stream of commerce had partly reverted to its old Egyptian channel, and had partly taken the new course of Palmyra, the city at Wady Mousa became gradually depopulated; and, in the end, Kerek came again to be considered by travellers as Petra, because the existence of the ruined city in Wady Mousa has only lately been brought to light.



PETRA.—Ruins of a temple built in the "Clefts of the Rock."

and because Kerek was the principal place, and the only place with a Christian community, remaining in the diocese of the Greek church which retains the old title of the bishopric of Petra, originally derived from the Petra of Wady Mousa. The last sentence affords an explanation, in which we gladly acquiesce, of how Kerek came to be identified with Petra; and we only demur at the almost contradictory opinion, that, in remote antiquity, Kerek was "the crowning city" of the Nabatæans, which was distinguished by this name.

The following are among the considerations which satisfy us in a contrary conclusion to that which we have stated with all the force that can be given to it. We must state them as in the form of a bare abstract, without that full exposition from collateral considerations from which they might derive very material support. In the first place, the passage in Diodorus does not say that the place in question was the only city called Petra, but that there was a rock to which the inhabitants retreated, and which served them as a natural fortress. Now, if because Petra means a rock, *this rock* is to be regarded as Petra, there is no reason why Petra should not be sought wherever a rock happens to be historically mentioned in the rocky country of the Edomites. Thus then, if the rock were at the Kerek east of the Dead sea, we do not see that Kerek was therefore necessarily Petra. But, on the other hand, allowing that Diodorus had Petra in view, we think it might be shown it was more probably Wady Mousa than Kerek. He does not say that the rock was *east* of the Dead sea, nor that it was three hundred stades from that sea; but that, after the affair at the rock, the Greeks marched three hundred stades to the

neighborhood of the Dead sea. It may therefore have been *south* of the sea, and the loose indication of distance would allow it without violence to have been as far south as Wady Mousa. In fact, Major Rennell, who in his determination of the site does not appear to have taken cognizance of the recent discoveries in Wady Mousa, cites this very passage of Diodorus among his ancient authorities for placing Petra at another Kerek (*Kerek el Shobek*) south of the Dead sea, and in the immediate vicinity of Wady Mousa; which, taken as a conclusion independent of recent discoveries, is a most remarkable and valuable corroboration. Again, if the more northern Kerek had been Petra at the time to which Diodorus refers, this would prove it to have been not the more ancient, but a more modern Petra. We allow the station may have belonged *then* to the Edomites, because they encroached northward, after the captivity, into what had formed the dominion of Judah on the one side of the Dead sea, and of Moab and Ammon on the other. But that it could not have been a principal town or any town of the Edomites, in the time of the inspired writers of the Old Testament, is clear from the fact that its site was then in the territory of Moab, on the borders of Ammon. If any proof of this were wanting, it is found in the fact mentioned by Burckhardt's editor himself, that Kerek was called *Charax* by the Greeks, to which the Romans added *Omanorum* (Kerek of Ammon) to distinguish it from the more southern Kerek; and the Greeks themselves, for the same purpose, referred it to Moab, in the name of *Charagmoba*. We think these considerations demonstrate that Kerek could not have been a town of the Idumæans before the captivity; nor, could it therefore be mentioned or



Defile in Idumea in the Road from Palestine to Egypt.

alluded to as such by the sacred writers. And if the prior claims of Kerek be dismissed, no one will dispute those of the town in Wady Mousa. We might rest here : but we will add that the Edomites were a great people, established between the Dead sea and the Red sea (the sea of Edom), when the Israelites were about to enter the Promised Land, and the history of the transaction between the two people, appears to demonstrate that the capital of Edom was then, south of the Dead sea. They were also obviously a great commercial people before the time of Solomon ; and the very reasons of commercial advantage which are thought to have dictated the *ultimate* removed to Wady Mousa, must have equally operated at an earlier period—Kerek being most advantageously situated as the capital of a people possessing the commerce of the Red sea. Furthermore, we have seen that Jerome says Joktheel was Petra ; and he, of all men, was likely to have known if Kerek was or ever had been the ancient Petra ; but he says Petra was near Mount Hor, and Burckhardt and his learned editor were the first to receive and confirm the local traditions which determine

Mount Hor to have been one of the mountains near Wady Mousa. In conclusion, we may add that the prophetic intimations concerning Edom receive no illustration from Kerek, but correspond with astonishing precision to the present appearances presented by the remains of the wonderful city in Wady Mousa : and, although the consideration has been generally overlooked, we shall ever be disposed to contend that the prophetic intimations concerning the (then future but now present) condition of towns, furnish the very best and most authoritative data by which the sites of such places may be determined.

"Thou that dwellest in the clefts of the rock."—
 JER. xlix. 16. Our engraving of the Rocky Valley from Laborde shows a pass, beyond which appears the theatre, the whole of which, with the ascending rows of seats, is cut in the solid rock. Speaking of this, Mangles says : "This pass conducts to the theatre, and here the ruins of the city burst on the view in full grandeur, shut in on the opposite side by craggy precipices, from which numerous ravines and valleys branch out in all directions ; the sides of the valleys covered with an endless variety of excavated

tombs and private dwellings (Isa. xlix. 16) presented the most singular scene we ever beheld; and we must despair to give the reader an idea of the singular effect of rocks, tinted with the most extraordinary hues, whose summits present us with nature in her most savage and romantic aspects, while their bases were worked out with all the symmetry and regularity of art, with colonnades and pediments, and ranges of corridors adhering to their perpendicular surface." To this the reflections of Laborde, marking, as they do, the fulfilment of the doom denounced by the prophets, form a marked sequel: "What a people must they have not been who first opened the mountain to stamp upon it the seal of their energy and genius! What a climate, too, which gilds with its light the graceful forms of a great variety of sculptures, without suffering its winters to crumble their sharp edges, or to reduce in the least their high reliefs! Silence reigns all around, save where the solitary owl now and then utters his plaintive cry. The Arab passes through the scene with perfect indifference, scarcely deigning to look at works executed with so much ability, or to meditate except with contempt on an object which he in vain seeks to comprehend." The writer of this passage has, without intending it, made every word it contains replete with meaning for the illustration of prophecy.

As sepulchres are more frequently than dwellings excavated in the sides of mountains, we suspect that too large a proportion of those in Petra have been regarded as tombs. That a great number of them were destined for sepulchres is perfectly clear: but that many were used for habitations is allowed by Mangles and Laborde. The former, after quoting the Nubian geographer, who states that the houses of Petra were cut in the rock, says: "That this was not universally true is evident from the great quantity of stones employed in the lesser kind of edifices which are scattered over the whole site; but it is also true that there are grottoes in great numbers which are certainly not sepulchres." Of these he particularly mentions one which presents a front of four windows with a large and lofty doorway in the centre, but the front of which is without ornamental sculptures. The door and three of the windows open into a large apartment, sixty feet in length and of proportionate breadth; while the fourth window belongs to a smaller apartment, apparently for sleeping, which is not brought down to the level of the floor of the great chamber, but has below it another small apartment which receives light only from the door. Of the constructed edifices in the open area itself, very little of a definite shape now remains, and the ruin into which these houses have fallen furnishes a marked and instructive contrast to the comparatively perfect condition of the surrounding works in the rock. There is however one interesting mass, which, though greatly ruined, towers above the general wreck, and affords us information as to the form and style of the constructed edifices, and we have therefore made it the subject of our engraving. In the foreground are the remains of an archway of very florid architecture, with pilasters, having panels, enriched with foliage, &c., in the manner of Palmyra. The arch was the

introduction to the great pile of building standing nearly at right angles to it. This building has a door on one side, on the three others it was decorated with a frieze of triglyphs and large flowers in the metopes. Beams of wood are let in at intervals between the courses of the masonry, and continue to this day—a strong proof of the dryness of the climate. The front had a portico of four columns. This part is much ruined. The interior of the edifice was divided into three parallel chambers, and there seem to have been several stories. Laborde calls it a temple; but Mangles, whose description we have followed, thinks from the interior construction that it was rather a palace or some private edifice. The Græco-Roman character exhibited in this and in broken portions of other ruins, indicating a later date than the time of the prophets, is a corroboration of prophecy; for it was foretold that God would destroy and make desolate not only that which Edom had already built, but that which it should build in future times: "Though thou make thy nest as high as the eagle, I will bring thee down."—"They shall build, but I will throw down."

That our readers may have an idea of the rocky scenery in Idumea we have given on the preceding page a view of a defile in the road from Palestine to Egypt.

THE EASILY CONVINCED.

ALTHOUGH the present age is, to say the least, not less remarkable than any preceding one for caution in investigating truths, whether in science or matters of fact, there is nevertheless a class of men who are far more easily satisfied about evidence, and who more readily take up with new ideas, than their neighbors. Not a newspaper do we read but there is in it some splendid discovery, in science itself or in its applications; the patent list shows how many serious attempts are made to turn these to account: all of them get patrons more or less numerous *at first*—but time passes on, and of the very small number of such things which continue to engage attention, we need scarcely speak. Most of these things look extremely well when first hit upon. They show capitally in model. The closest investigation fails to detect a source of fallacy or failure; but somehow it always turns out that, when the thing is brought to practical experiment, there is some plaguy obstruction or difficulty, not formerly dreamt of, which upsets all, and then we hear no more of the matter. The successful applications of science to economic purposes during the last age, thought to be so fertile in them, can, after all, be enumerated in a breath—steam, gas, Mackintosh, and the electrotpe. We have also got one or two new sciences, as chymistry and geology; and great, no doubt, are these additions to our knowledge. But even here we have our hasty theorists also—let the single doctrine of "scratches"* bear witness. There is, indeed, a class of minds so consti-

* It is our misfortune to be under the necessity of marring much that we say—we will not call it wit—by explaining. We here allude to the *stria* found upon the surfaces of rocks—of late a favorite subject of speculation among the geologists.

tuted that every novelty calculated to excite wonder, or to raise hope, is sure to catch them. These minds are not necessarily to be supposed of a weak kind, or to have a decided tendency to delusion. They are only disposed, from wishing a thing to be true, to allow it to be so upon insufficient evidence. In many cases, it would seem to them ungenerous to doubt, and therefore, being benevolent persons, they believe. Or it is that they can not bear to spoil a thing which tells so well, by meeting it with doubts. Or, perhaps, it fulfils and makes good some vague notions long cherished by themselves. Or a good theory, or project, or new doctrine, may be a good deal like vice in Pope's well-known couplet: we grow familiar, we pity, we embrace. It was probably the same class of minds which created and gave currency to all the wondrous monkish tales of the middle ages—easiness of conception and reception of strange things being the common features of both.

The class of philosophic and scientific inquirers has only its credulous members; but the whole race of antiquaries seems marked, and to have been marked in all time, with the fatal facility of taking in new and wonderful things. No class of investigators has furnished so many warnings against rash conclusions. It was upon a real event that Scott founded the story of his Oldbuck. A worthy old gentleman, a Sir John Clerk of Penicuik, was demonstrating the features of a Roman camp, in the neighborhood of Moffat, to an admiring circle of friends, among whom was the young novelist. "And this," said he, pointing to a mound in the centre, "was of course the *prætorium*." "Prætorium here, prætorium there," said a shepherd standing by, "I made it wi' a slaughter spade." An anecdote to much the same purpose has recently been told. "General St Clair, about forty years since, when governor of the Northwestern territory, received a present of a strange-looking copper coin, said to have been found in a spring near Cincinnati. General St Clair was not merely a man of the world, but he was also a highly educated, accomplished gentleman, and as little liable as any other we have known to be deceived under such circumstances. But so it was; the copper coin became at once a precious medal, the work of an extinct people, and its crooked-looking characters a key to unlock the great secret of their origin and fate. We saw this treasure-trove in the possession of General St Clair at Marietta, and we were allowed, like some others, to take an impression of it in pewter, never doubting, any more than our elders in knowledge and years, that, if it was a post-diluvian work, it was at any rate contemporaneous with the renewal or discovery of the arts immediately after the dispersion. But alas for the vanity of human expectation! The original, or a copy, fell into the hands of the late Colonel Duane, who had spent a portion of his life in India, and he detected at once that it was a Hindostanee coin, worth one cent. The buffalo was transformed, without any magic wand, into a cow, and the Manitous into Vishnu and Brahma." As another example, take the following story from Mr. Laing's Tour in Sweden: "The antiquarian world has suf-

* A spade used for digging turf.

fered a severe shock on the subject of Runic lore the other day. At a place called Hoby, between Carshamn and Runamo, in the province of Bleking, there is a Runic inscription on a rock, noticed by Saxo Grammaticus, who tells us his contemporary, Waldimar I. of Denmark, who lived in 1160, had sent learned people to decipher it in vain. It remained 500 years unthought-of and undeciphered, when Olaus Wormius, and after him many zealous Runic antiquaries, again attempted the task; but time had not made it more intelligible, and nothing could be made of it. At last, in 1805, a Danish antiquary, M. Arendt, made a pilgrimage on foot to this enigmatical inscription; and not being able to read it, he declared it was only a *lusus naturee*—accidental marks and scratches in the rock. This was intolerable. For nearly thirty years the antiquarian body brooded in silence over this dictum of their recreant brother. At last, in July, 1833, the Royal Society of Sciences at Copenhagen sent a solemn deputation of three of its members, Professors Molbech, Magnuson, and Forchhammer, to the spot; the rock was carefully examined, was found to be a mass of granite-gneiss, intersected by a vein of whinstone (or black trap), in which the marks adverted to occur; and, to the joy of all genuine antiquarian spirit, the inscription was declared to be an inscription, blended, indeed, here and there with accidental cracks and fissures, but an inscription of artificial characters; and the artist who accompanied the commission made an accurate drawing of the whole vein, and the characters traced upon it. Nothing was wanting to complete the joy of all true antiquaries, but that these characters should be deciphered. For ten long months no progress was made. Professor Magnuson, to whom the task was intrusted, could bend them into no form of intelligibility. At last, in bed, on the 22d of May, 1834, the idea struck him to try to read the inscription backward, from right to left. The thing was done—the thing was clear—the inscription was deciphered in two hours. It is in the old northern or Icelandic tongue, and in regular alliterative verse, and must have been cut in the rock shortly previous to the battle of Braavalle, which took place in the year 680, between Herald Hildetand and Ring, kings of certain portions of Sweden: 'Hildetand received the kingdom—Gard hewed out—Ole took the oath—Oden consecrate these ruins,' &c., &c. Could any thing be more satisfactory, or better established, or more clearly explained? And now, to the dismay of the antiquarian world, out steps a man of acids and alkalies, a chymist, a philosopher—in short, the great Berzelius—coolly proving beyond all doubt, in a paper in the Transactions of the Royal Society of Sciences of Stockholm, that our inscription is, after all, but a *lusus naturee*, or natural marks or stains on the rock! Is not this provoking?"

Archæological inquirers often show their besetting foible in the assigning of over-recondite origins for things, and suggesting explanations that go far beyond the mark. The reading of a Rosetta stone, to the discovery of a new language and a thousand years of heretofore unknown history, is a lucky hit, as rare as the adaptation of steam or carbureted hydrogen to common purposes. When we turn from the contem-

plation of the one solitary prize to the multitude of blanks, what a sad spectacle is presented ! At present, it is the ancient tumuli and ruins of Central America which form the favorite problem. Some time ago, it was the round towers of Ireland. These last have been assigned to all sorts of strange, mysterious, and remote origins. A large octavo volume was written to prove them connected with Buddhism. Lately, it has been stated that they are of comparatively modern date, and the accounts of the expense of building one of them have been discovered. Thus it is that the wonderers are now and then disappointed. We have seen a serious speculation tracing the leek worn by Welshmen on St. David's Day to the ancient Egyptian worship. Formerly, there was a practice of carrying a buck's head in procession at St. Paul's Cathedral, on the day of the commemoration of St. Paul. It was fixed on a pole, and carried in front of the cross, out at the west door. This was a very remarkable-looking ceremony, and suggested the idea of an ancient Pagan custom continued by the Christian priesthood. It has been spoken of again and again in books, as a relic of the customs which obtained on the same spot, when a Roman temple stood there. The English editor of Dupré's work on the Conformity between Modern and Ancient Ceremonies, takes this view with a great deal of gravity. Now, so old a writer as Stow has clearly shown that the practice originated in no extraordinary way at a comparatively recent period. He quotes the actual deed of 1274, wherein the dean and chapter of St. Paul's grant a piece of land in Essex to a Sir William Baad, on the condition of having a doe and buck brought to them annually, the latter to be produced at the time of the procession, as above described. Thus, what was thought a curious vestige of British paganism, turns out to have been only one of the quaint tenures of the middle ages. Pennant, in his Tour in Scotland, has fallen into a mistake nearly similar. He there delineates on copper, and describes in his letter-press, what he calls a small ivory image, which was found near the castle of Dunstaffnage in the Highlands. As Dunstaffnage was a palace of the early kings of Scotland, and this image represented a crowned and throned monarch, Pennant made out the latter to be a deportraiture of some Caledonian prince of a thousand years ago, and a surprising specimen of early art. Behold, however, about twenty years ago, there was found, near the ruins of an old nunnery in the Isle of Skye, a number of such images, some of which resembled that figured by Pennant, while others represented knights, castles, and other objects ; in short, they were simply a set of chessmen, albeit of early workmanship, and made, not of ivory, but of the tooth of the sea-horse. There could therefore be no doubt that Pennant had set forth as the picture of a particular king what was neither more nor less than a chessman, and no more a particular portraiture than the figures of kings and knaves on a pack of cards.

The happy inductions of Cuvier from a single fossil bone as to the general character of the animal to which it belonged, may be said to rank with the steam-engine and the Rosetta stone—the one good hit among many misses. It would appear that even

this eminent man was not incapable of being led too far by a wish to account for appearances. The writer of the paper in the *North America Review*, which has already been quoted, tells the following anecdote : A learned professor, well known some years since in New York, "devoted himself with great ardor to scientific pursuits, particularly to investigations into the animal kingdom, and was singularly curious in his inquiries into all circumstances presenting any unusual features. This trait of character rendered him sometimes liable to be deceived ; but he filled his position worthily, and contributed to the progress of his favorite sciences. In one of our western excursions, we found ourselves in the country of the *gophers*, small animals which dwell principally in the earth, and which are known to naturalists under the name of *pseudostoma bursarium*. Their natural habits lead them to burrow in the ground, and they are furnished with two pouches, formed by prolongation and indentation of the skin of the cheek, by which the pouch, while it opens outward, is contained within the jaws. The object of this strange apparatus is said to be to enable the little animal to excavate his dwelling in the sandy ground by filling his pouches with sand, and then carrying the burden to the entrance of his hole, and there depositing it by pressing his fore-paws upon his cheeks. * * At this time the animal was not much known, and we succeeding in procuring one, and gave directions that the skin should be carefully prepared for preservation. It was in the month of July, and it became necessary to turn the skin of the pouches inside out, in order that it might be effectually dried. In this position, they presented the appearance of two strange-looking projections, pushed out from the cheeks, and whose object it would have been difficult to divine. We saved these exuviae of our *gopher*, and afterward sent them to the naturalist to whom we have already alluded. We did not replace the inverted pouches in their proper position, never supposing for a moment that any mistake could exist respecting their natural arrangement. But so it was : the stuffed specimen was sent to Europe with the projecting appendages ; and the animal formed the subject of a memoir, we think, of Cuvier himself, to the Academy of Natural Sciences, in which this zoological stranger was described as belonging to a new species of quadrupeds, and some speculations were indulged upon his proper position and his habits of life. Soon after the journal of the scientific body, which contained this memoir, reached the United States, we met the same gentleman, who was the correspondent of Cuvier, and he informed us of the high rank which the new animal had attained, and favored us with an inspection of the memoir in which it was described. We immediately saw and pointed out the mistake of which we had most unconsciously been the cause. The circumstances were subsequently explained, and the error corrected in the history of the proceedings of the learned naturalists of Paris. But the incident has remained impressed upon our memory, warning us that the highest acquirements may be at fault, and that we must not always surrender our confidence to the highest names."

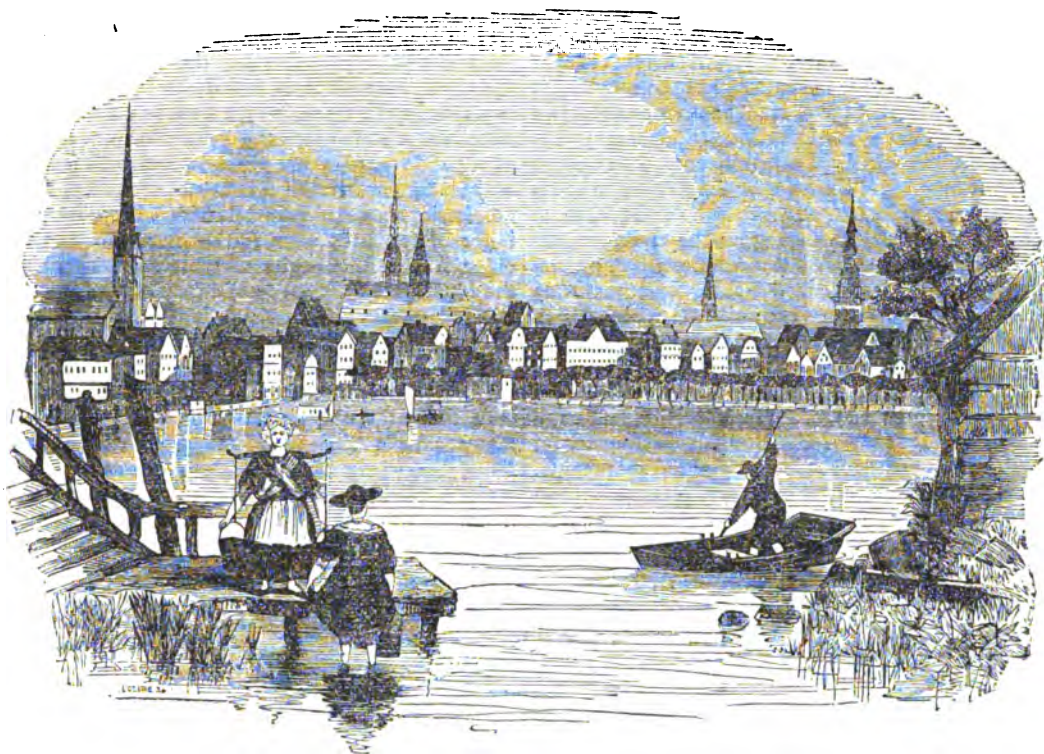
Let us not, however, press the matter too severely

against the men who give their thoughts to scientific or even to archæological inquiry. If we search deeply into the philosophy of these mistakes, we shall find that they in many instances proceed from causes rather reflecting credit than discredit on the human mind. In all such cases, it must be observed, there is the vagueness inseparable from a want of clear knowledge. From what is known, perhaps only a few fragmentary and disconnected particulars, it is amazing how plausible a hypothesis is sometimes formed—perfect in itself, tallying perfectly with every ascertained particular, everything that could be wished—except the truth. The case of the Swedish rock is at first sight ludicrous, but I, for my own part, can easily understand how such a thing might occur, without necessarily throwing ridicule on either antiquarianism or these men in particular. Let me be candid, and state a case where I was myself, though with very humble pretensions, the investigating archæologist. The subject was a three-fourths obliterated Latin inscription in the Gothic character, which had puzzled everybody. I made out a reading of it, which appeared tolerably good sense, and appropriate to the situation; but on a second and more careful inspection of the stone, it was found that some features of the lettering were not rightly accounted for. Setting to the task again, I found reason to give up almost every part of the first reading, and adopt a second quite different in its general sense, but in which scarcely a single feature of the legend was left without a proper significance. Here were two conjectural readings, one extremely plausible, another nearly as much so, *but different*, excogitated from one inscription. This I can not help thinking a curious mental process, somewhat analogous, perhaps, to the more dexterous and felicitous efforts at anagram-making. Of a similar character are the many various hypotheses which have been formed as to who was Junius, two or three of which have been so perfect in all respects when taken separately, that no one could well doubt—till he saw the second and the third. Some of the more mystic parts of Scripture have given a like exercise to the ingenuity of commentators. There are passages in the Apocalypse which have been explained six or eight ways by different men, and all the explanations equally plausible considered apart from the rest. There are some minds which delight in such exercises. I have heard a learned and ingenious person detail a theory which he had formed from a number of far-detached texts, showing the most unexpected typical relations among them, and the whole bearing most luminously upon human destiny; which yet one could not but feel to be merely a surprising product of human cogitation, from data out of which another person would probably have made as good and plausible a result, but totally different. The making-up of such imaginative textures, with the few clear points all so nicely pieced in, may not be a directly useful, yet neither is it a mean exercise of intellect. Anywhere but in a paper on credulity, I might have been tempted to suggest it as a new and interesting kind of proof of the power of mind over matter. How almost creative does mind appear in such a power of fashioning and accommodating dead things to its own notions!

This ductility of obscure matters, or plasticity of mind over them, shows two things—first, that the hoaxing of men of learned investigation is far less of a good joke than is generally supposed. Such hoaxes are thus shown to be easy matters, for there is evidently no phenomenon so odd and irrelative but what the vagueness of all knowledge will admit of its being brought by human ingenuity into some relation, and explained accordingly. Hoaxing in such circumstances is like tempting a child into a criminal act. It is no triumph, because it is so easy. The second thing is, that investigators can scarcely be too cautious in yielding complete conviction where exact proof is wanting. When we reflect on the great theories which have been formed respecting doubtful matters, all self-consistent, all of them weaving in and accounting for the stray facts, yet all ultimately proved to be groundless, we are almost led to doubt of everything not mathematical. But this is not right. Belief upon the testimony readily to be had is essential to our condition here, since it is quite impossible for every one to investigate everything for himself. Therefore, indeed, it is that there is belief.

Caution as to final approval is all that is really required. "Try all things," is, within certain limits, a good maxim in the affairs of learning. And here it is that I think the present tone of the philosophical mind in our country and age is at fault. The constant cry is, give us facts and leave hypotheses alone. But it is not possible for any human being to go on constantly collecting dry unconnected facts. We require to be allowed a little generalization by way of *bon-bons*, to encourage us in our tasks. And is not imagination often a means of leading on to fact? We conjecture, we seek evidence in support, and ultimately our guess becomes a truth. Therefore, I say, the forming of hypotheses is, to a certain extent, not only allowable but laudable. And thus there is a utility and a final cause for even that mocked thing, credulity. The credulous are the nurses appointed for ideas in their nonage—which, if left to the tender feelings of the cautious alone, would for certain perish of cold and hunger, before ever they had shown their first teeth. The credulous catch them and foster them, and look out for their parishes, and get them comfortably brought on to their apprenticeships. By-and-by, they begin to kick about for themselves, and settle into respectable and useful members of society—but no thanks to the awful doctors who never have anything to do with the intellectual bantlings that don't come into the world properly stamped and labelled.

THE ordinary writers of morality prescribe to their readers, says Addison, after the Galenic school;—their medicines are made up in large quantities. An essay writer must practise in the chymical method, and give the virtue of a full draught in a few drops. Were all books reduced thus to their quintessence, many a bulky author would make his appearance in a penny paper. There would be scarce such a thing in nature as a *folio*; the works of an age would be contained on a few shelves, not to mention the millions of volumes that would be utterly annihilated.



Hamburgh, from the Alster.

HAMBURGH.

THE Great Fire of London, the Burning of Moscow, or the Earthquake at Lisbon, in 1750, are the only events in modern history which afford a fitting comparison to the recent conflagration at Hamburg. We offer the following brief historical notice of this ill-fated city, and its recent conflagration, which we can not doubt will prove acceptable to our readers.

In the ninth century Charlemagne had pushed his conquests to the bank of the Elbe, and as the still pagan inhabitants did not submit very willingly to his sword, he selected a somewhat elevated spot about seventy-five miles from the German Ocean, on the north bank of the Elbe and east bank of the Alster, and laid the foundations of a town. This was Hamburg, which, by the twelfth century, had become a place of considerable trade, and would have been still more flourishing if the Elbe and the German ocean had not been infested by robbers and pirates, who harassed the commerce on which its prosperity mainly depended. Hamburg has the merit of having freed the Elbe and neighboring seas from these lawless vagabonds. At the very period when our king John was practising something very like piracy in the English channel, the citizens of Hamburg were planning the means of freeing the seas from the robbers and pirates who obstructed the rising commerce of Europe. For this purpose, in 1239 they concluded an alliance with the inhabitants of Ditmarsch, at that time independent, and those of the land of Hadeln; and two years afterward Lubeck joined in this con-

federacy, which carried its objects into effect by maintaining ships and soldiers to clear the coasts between the Elbe and the Trave, and the waters from Hamburg to the ocean. This was the origin of the Hanseatic league, which played so conspicuous a part in the commercial history of the middle ages. Brunswick joined the two other cities in 1247, and was constituted a staple, that is, certain commodities could only be bought and sold there. A commercial route was opened overland from Brunswick to Italy, which then enjoyed the trade to the Levant and India. Hamburg and Lubeck thus became the emporia for the produce of the East, of the south of Europe, and the manufactures of Italy and Germany, which were distributed in the various countries of the north of Europe in exchange for their raw produce. To carry on such a trade with advantage the Hansards established a large number of trading factories, and among others was one in London, which afterward became known as the Steel-yard. It was situated between Thames street and the river, a little to the east of Dowgate. For a long period the Hansards were very numerous and enjoyed important commercial privileges. England was not then sufficiently wealthy to carry on the commerce of the country with native capital.

Until the fifteenth century the town was confined between the Elbe and the east bank of the Alster, but the population increasing, especially from emigration of refugees from the Netherlands, the west bank of the latter river began to be built upon. This part is distinguished as the New town. The repeated wars

in Germany, to the close of the eighteenth century, had rather the effect of promoting the prosperity of Hamburg than otherwise. It still continued the chief seat of commerce in the north of Europe and at the commencement of the present century might justly be regarded as one of the most flourishing and opulent cities on the continent. Its misfortunes commenced with the occupation of Hanover by the French in 1803. They seized Cuxhaven, at the mouth of the Elbe, to prevent English ships coming up the river, and the English closely blockaded the whole coast, so that commerce was paralyzed, and that direct maritime intercourse with so many countries on which Hamburg depended for its prosperity, was completely interrupted. The French also laid the inhabitants under contribution. In 1806 Hamburg was occupied by a large French corps under Marshal Mortier, and compelled to raise a sum of 640,000*l.* as a ransom for English goods in the warehouses of the merchants. The Treaty of Tilsit did not make any great difference in its real state, as it enjoyed only the shadow of its former independence, and was not exempt from the requisitions of the French generals. Napoleon's Berlin and Milan decrees, to destroy British commerce, ruined the little remaining trade, and the sacrifices which had been made for the preservation of English merchandise and colonial produce in a former year, now proved unavailing, and all articles of this description were either confiscated or burnt. At the end of 1810 Hamburg was incorporated with the French empire as the capital of the department of the mouth of the Elbe. Its fate as a great centre of commerce appeared now to be sealed; but the very earliest opportunity of regaining independence was eagerly seized, and when the Russians appeared at the gates of Hamburg early in 1813, and the French evacuated the town, the old constitution was joyfully restored. Unfortunately the Russians were unable to maintain their position, and the French again entered, and, as might be expected under such circumstances, punished the inhabitants for the alacrity which they had shown in greeting the arrival of the Russian troops. The citizens were treated with a degree of severity which excited indignation as well as sympathy, and were called upon for a contribution of 2,000,000*l.* sterling. During the siege of the town, which subsequently took place, forty thousand of the inhabitants were driven out of the town in the depth of winter, and the French seized the treasure at the bank, amounting to 700,000*l.*, thus destroying for some time the source of future credit when happier times arrived. The town was not relieved until May, 1814, and on the 26th the constitution was once more restored. The indemnity obtained from France at the peace was very inadequate. The misfortunes which Hamburg experienced up to the close of the war are now fortunately only matters of history. The public spirit of the citizens and the favorable commercial position which Hamburg enjoys enabled it to regain more than its former prosperity. We trust that in a similar way it will more than recover from the effects of its recent misfortune.

The site which Hamburg occupies is nearly an oval, about four miles in circumference. On the north

the Alster forms an extensive basin, about a thousand feet in length, which is used for boating-parties. On the south of this basin stand the best-built houses in the city. This place is called the Ladies' Walk and is planted with trees. The walk is continued to the ramparts, which, since the peace, have been laid out as a public garden and promenades, with a carriage-way for three carriages abreast all around. North of the basin above mentioned which is formed by the inner Alster, is another, farther north, formed by the outer Alster, the banks of which are occupied by the handsome residences of many of the merchants. Six miles west of Hamburg is another favorite spot, where the most opulent persons in the city have their country-houses. The Elbe admits vessels drawing fourteen feet water at all times, and those of eighteen feet at spring-tide. The old town contains many canals, which are supplied chiefly by the Elbe, but partly by the Alster, and are filled with water each tide. Almost all the warehouses are close to these canals. The streets, like most of the old towns of the continent, are narrow and gloomy; and the general appearance of the place by no means corresponds to the idea which its commercial importance naturally excites. The houses are old-fashioned, and many of them are either built of wood entirely, or contain a large quantity of timber. At the same time they are not particularly picturesque, or very remarkable for their architecture or history. The streets in the "new town" are broader and more regular; but the still newer town which will shortly arise will no doubt exhibit great improvements.

Until 1768 the kings of Denmark claimed the sovereignty of Hamburg as counts of Holstein, and its rights as a state of the empire were recognised in 1618, though it did not obtain a seat or a vote in the diet. Hamburg frequently paid large sums to avert attacks from Denmark: but the conclusion of a treaty with the house of Holstein in 1768 put an end to its claims; and in 1770 it was confirmed in its rights as a free city of the empire. The archbishops of Bremen claimed the cathedral and the property belonging to it, but it was assigned to Sweden in 1648, and afterward passed to Hanover with the dutchy of Bremen. In 1802 the cathedral and its property were finally secured to Hamburg. On the 8th of June, 1815, Hamburg joined the Germanic confederation as a free Hanseatic city. The constitution consists of a senate, which acts under certain popular limitations. The senate, which is composed of four burgo-masters and twenty-four senators, with four syndics and four secretaries, has the executive power, and the sole right of proposing laws; but no laws can be made and no taxes imposed without the consent of the citizens in common hall. The citizens are divided into five parishes, each of which chooses thirty-six members to the council of one hundred and eighty, consisting: 1, of fifteen elders, who are the guardians of the laws, and have the affairs of the churches and the poor under them; 2, of forty-five deacons, nine from each parish, who with the elders form the council of sixty; and, 3, of twenty-four subdeacons from each parish: all these are obliged to appear in the common hall, where at least two hundred citizens

must be present. From this council is chosen the board of sixty, and out of that the fifteen elders or aldermen. Only the senators and the elders receive salaries. For the administration of justice there are various tribunals. In the last resort the decision is with the High Court of Appeal for all the free cities sitting at Lübeck. In the German diet Hamburg has one vote in the deliberations, but in the select council it has a vote only in common with Lübeck, Bremen, and Frankfort. Its contingent to the army of the Confederation is one thousand two hundred and ninety-eight men, and its contribution to the general fund five hundred florins per annum. It has also a burgher guard of nine thousand infantry, cavalry, and artillery. The territory of Hamburg comprises an area of about one hundred and fifty square miles (including the city), and contains a population of one hundred and forty thousand, the population of Hamburg and its suburbs being about one hundred and twenty thousand. Lutheranism is the religion of the state, but all denominations enjoy toleration, with the exception of the Jews, who labor under several restrictions from which others are exempt.

The intercourse of England with Hamburg is now on a different footing from that on which it so long existed during the middle ages; but it is not less intimate or advantageous than it was centuries ago. In 1837 one third of the shipping which arrived at Hamburg was from the ports of England, chiefly London and Hull. Their aggregate burden was one hundred and sixty thousand tons, the proportion for steamboats being sixty-seven thousand five hundred tons.

THE GREAT FIRE.—On the fifth May, 1842, about one o'clock in the morning, a fire broke out in a narrow and obscure street of Hamburg, called the Deich Strasse. The watch were quickly on the spot, but did not succeed in stopping the progress of the flames. In the upper part of the house in which the fire originated a quantity of rags were stored, and although at the time when it burst forth there was little wind stirring, the combustible nature of these materials and the large proportion, of timber used in the construction of the neighboring houses in that narrow street rendered them an easy prey to the flames. Eight or nine hours after the commencement of the fire it was mentioned in distant parts of the city, which the conflagration afterward reached, that a large fire was raging in the neighborhood of the Deich Strasse; but this news, detailed as a part of the morning's gossip, excited only that general sentiment of regret which persons who are not likely to be themselves sufferers are apt to entertain on such occasions. This indifference was soon changed into consternation as accounts were successively circulated respecting the extent of the fire; though still many who lived in parts which were yet distant from its ravages felt themselves secure; and sympathy for the loss of property and the distresses of others was the only feeling which these reports called forth. But the fire continued to rage wildly and fiercely, and at length there was not an inhabitant of Hamburg who did not tremble with apprehension at its awful progress, as it swept from street to street, across the canals and market-places, enveloping churches, the public build-

ings of the city, warehouses with their stores of coffee, sugar, tobacco, corn, and other merchandise, the lighter in the canal ready to discharge its cargo, shops, dwelling-houses, and all, in one common ruin. The wind had changed into a violent gale, and gave wings to the burning embers which rose from the crackling timbers as the roof-tree and crumbling walls yielded to the fury of the conflagration. The following letter, written by a young lady on the spot gives so excellent a general view of the progress of the fire, and the circumstances which marked its successive stages, that we are induced to transcribe it in preference to compiling our account from a variety of sources. The letter is dated on the 9th of May:—

“On Thursday morning (says the writer), the 5th instant, my sister, her husband, and I, walked to the French church. Frederick, on taking away the breakfast, told us that since eight or nine o'clock a terrible fire had been raging in the Deich Strasse. Papa, who knows the distance between the Neuer Jungfernstieg and the Deich Strasse, will agree that we had no cause for alarm. In coming out of church the servant said to Madame Parish (who, you are aware, lives in the country, and had come thence this morning direct), that she could not go to her town-house in the carriage; that twenty-two houses had already been totally burnt—that, in fact, hers was in great danger, and that the fire was becoming more and more formidable. A few hours afterward came the news that the house of Mr. Parish was no more, and that the flames were spreading every instant. Toward four o'clock in the afternoon, from our attic windows, we witnessed the destruction of St. Nicholas's church. It was terrible to see this beautiful building become the prey of the element, which was becoming more fearful the more ground it gained. My sister and her husband were to have gone to the opera in the evening, but it was announced that in consequence of the calamity there would be no performance. The spectacle became from hour to hour more shocking. The whole city now began to show the most lively alarm. The bells, the firing of cannon, the cries and confusion in the streets, all presaged a night of anguish and terror. Our apprehensions, alas! were but too faithfully realized. It was not, however, till night had spread her sad wings over the scene that we could perceive the whole extent of the destruction which menaced the entire city. The heavens became as red as blood—the devouring flames, increased more and more by an impetuous wind, rose to a gigantic height. At seven o'clock Madame——came to us in a wretched state. She told us that her sisters at Holzdamm (who were farther from the fire than we, the flames having taken the direction of Dreck Wall and Bleichen) had sent all their valuables to her, so great was the fear they were in. We could hardly avoid smiling; for we thought it incredible that the fire could possibly reach Holzdamm. At ten Madame——went home, and my sister retired to bed toward eleven, but afterward we received a visit from some gentlemen, who came to say that serious measures were about to be taken, by blowing up some houses which were likely to cause the fire to spread farther. At half-past twelve, I went

to bed myself; but the noise of the explosions, the rumbling of the carriages and carts, the cries, the large flakes of fire which every instant were driven impetuously by the wind across my windows, threatening to set fire to our house, the excessive light of the conflagration, the whistling of the wind, and, as you will easily think, the idea that the lives of persons in whom we were interested were in continual danger, not to mention the conviction of the numberless misfortunes that were happening, prevented all sleep. The windows trembled with the redoubled concussions of the explosions, and the whole house seemed as if it would be annihilated. In such a state I could not close an eye; visions and dreams, but, above all, still sadder realities presented themselves to my imagination continually. Before three o'clock had struck, I found myself again with my sister, who, like me, had been kept awake by the dreadful noise caused by the blowing up of the Rathhaus. At this moment an order of the police was announced to us to wet the roof of our house, and to cause the water to flow in the gutters. Frederick had flown to the assistance of his brothers. We were therefore alone, and mounting on the roof, scarcely dressed, were soon throwing over it pails of water, and our neighbors were doing the same. We prepared ourselves for the worst—threw on our clothes: the confusion increased—we could not remain. We packed up in sheets and in boxes some of our effects. With the appearance of day our fears increased. It was a spectacle as sublime as it was fearful to view the sun, clear and brilliant rising in all its splendor over the Lombard's bridge, and on the city side to see nothing but a single mass of flames. It was not, however, a moment for contemplation, but for action; for the worst was to come. We called for the coachman to carry away the things we had packed; but how ridiculous to think we had any longer servants at our disposal! The city, or the passengers, had become masters of the coachmen, of my brother-in-law and his mother, and not a man was to be got to carry away our effects for love or money; our horses were harnessed to the fire-engines, and the greatest confusion prevailed. Now succeeded hours which I can not describe to you. The old Jungfernstieg began to be endangered. The Alster, before our windows, was covered with barges full of burning furniture; the old Jungfernstieg heaped also with goods on fire. On the promenade even of the new Jungfernstieg. I do not speak too largely when I say there were thousands of cars full of furniture, of merchandise, and of people who were saving themselves. Two carts were burning before our house. With our own hands we helped to extinguish the flames. A woman was on fire before our eyes; fortunately I perceived it time to save her. The horses became unmanageable, and fell down with fright almost into the Alster. A tremendous shower of ashes and of flakes of fire nearly suffocated us, and obstructed our sight. The wind blew with great violence, and the dust was frightful. The fire had now gained St. Peter's. The people thought the Day of Judgment was come. They wept, they screamed, they knew not what to do at the sight of

so much misery. The horses, without drivers, were dragging the carts about in disorder over the Esplanade. Soldiers escorted from the city the dead and the dying, and prisoners who had been plundering. At last, after the greatest efforts, we obtained carts and horses to transport our goods; but the exhausted horses, as well as men, refused to work. With bread in our hands we ourselves fed them. Whole families fell down and fainted before our doors. Along all the walls and out of the Damthor and, other gates nothing was to be seen but one spectacle of misery—a camp of unfortunates in bivouac, groaning, exhausted, famishing. I saw some who had become deranged, mothers with infants at breasts which had no nourishment for them. Fauteuilles of gold and satin adorned the ramparts, and the poor exhausted firemen were reposing on them."

The burning of the church of St. Nicholas is described by various persons as a magnificent spectacle. It was four hundred feet long by one hundred and fifty broad, and the spire was four hundred feet in height. The copper with which the spire was covered became so intensely heated as to ignite the wood-work of the edifice. After burning some time, the steeple fell grandly in. This was on the evening of Thursday. About this time three civil engineers, proposed to the senate to blow up some of the houses in the vicinity of the fire, so as to create a barrier to its progress; but while deliberating on this proposal, the conflagration seemed to gather fresh strength. They at length received the sanction of the senate to use their best endeavors to accomplish their purpose. Gunpowder could not be procured for some time, but small quantities were obtained from the stores of private individuals, and some of the houses nearest the fire were blown up; but at first this process was conducted on too small a scale to accomplish the effect intended. The wind occasionally veered and changed the direction of the fire, and burning flakes carried destruction into fresh quarters. It was natural that the process of wilfully destroying property by blowing up houses not yet in flames should at first be conducted with too much timidity; but the scale of operations was subsequently enlarged, when it became apparent that this was the chief means by which the safety of the remainder of the city could be effected. Many residents in Hamburg, assisted the three before alluded to, in their endeavors to arrest the fire; and it was while thus engaged that a few cases occurred in which they were ill-treated by the mob, who, in the midst of such scenes of horror, not unnaturally mistook them for a band of incendiaries. Many persons took advantage of the confusion and entered houses under the pretence of removing property to a place of security, but in reality to obtain plunder, or for the sake of intoxicating liquors. Twelve of these unfortunate wretches were subsequently found buried by rubbish in a wine-cellar. The loss of life was otherwise comparatively trifling, not amounting to fifty altogether; but so many persons being suddenly deprived of the shelter and comforts of home, and driven for safety to the open fields, added to the mental shock occasioned by such disasters, would

doubtless hurry numbers prematurely to the grave. Some died in the streets and highways while the fire was raging. About mid-day on Sunday, May 8th, the fire exhausted itself on the eastern side of the large sheet of water called the Binnen Alster, leaving a space of ground nearly a mile in length and in one part about half a mile wide covered with the smouldering ruins of houses, shops, warehouses, churches, and public buildings. The bank was destroyed, but fortunately the treasure in money and bullion was safely secured in fireproof vaults. The churches of St. Peter's and Gertrude, the Rath-haus, two prisons, the orphan-house, were also destroyed. The new Exchange, although in the midst of the conflagration, was not injured. The number of streets and places totally destroyed was forty-eight, comprising two thousand houses, or one fifth of the total number of houses in the city. Thirty thousand persons were rendered homeless. The reflection of the fire was seen by the passengers on board a Swedish steamboat in the Baltic, and pieces of burning tapestry, paper, silk, &c., fell at Lübeck, forty miles distant from Hamburg. The loss at Hamburg is estimated at about thirty-five millions of dollars.

FIFTEEN MINUTES TO SPARE.

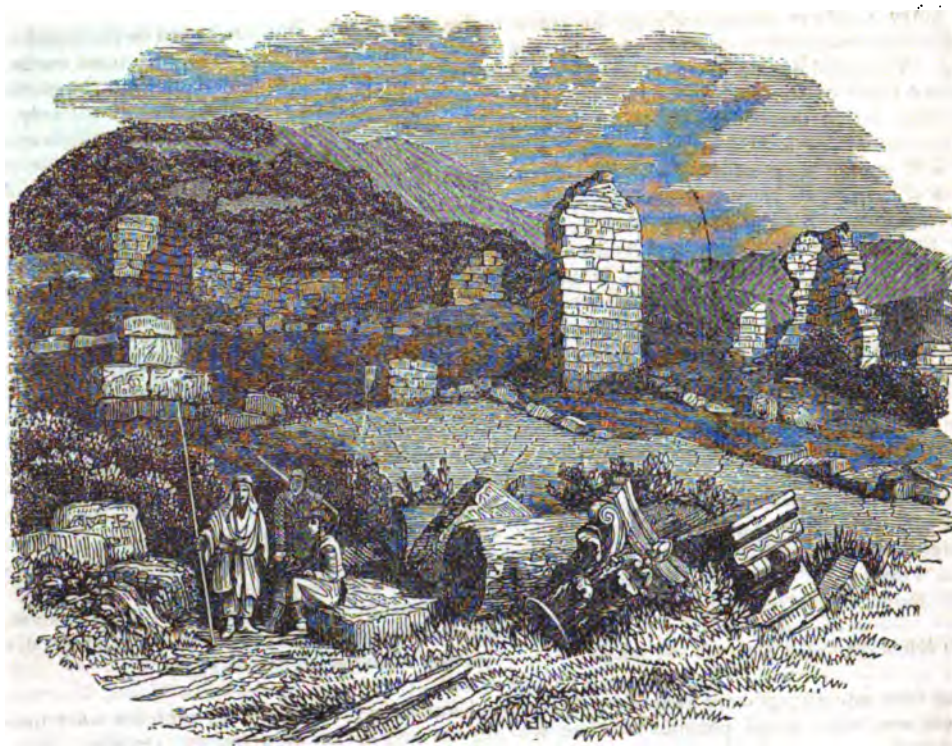
In passing from one engagement to another, during the day, there are often small portions of time for which many make no special provision, and so lose them entirely. A good economist, however, of time, which is money, and to many their only capital, will always have something to fill up these spaces. Put together, they make days, and months, and years, and are worth saving. Some persons are so constituted, that it is next to impossible for them to be systematic, methodical, and steadily and continuously diligent. They can work only by fits and starts; and they work best when the spirit moves them, compensating by the earnestness and energy with which they labor for the seasons during which they idly lounge.

A good many lazy persons imagine they have no right to be talked to, first for their idleness, and, secondly, for their impudence in trying to excuse their drone-like propensities, by pretending to be like the few eccentric great men, who are, in respect to the way in which they do things, a law unto themselves. Most people, to accomplish anything, need to be constantly industrious: and for them, it is wiser never to have "fifteen minutes to spare," and always to have some little matter to which they can turn their hand. A certain mathematician, is said to have composed an elaborate work, when visiting with his wife, during the interval of time between the moment when she first started to take leave of their friends, and the moment she had fairly finished her last words. We heard once of a young man, eager for knowledge, who read the whole of Hume's History of England, while waiting, at his boarding-house, for his meals to be served. No excuse is more common for ignorance, than a want of time to learn; and no excuse is more frequently false. It is not always false. Unconsciously one may get engrossed in business and entangled with engagements, so that he can not well

release himself. But it is bad to do this; and against it one should be on his guard. In most cases, however, such entire occupation of time is not the fact, it is only imagined to be the fact. Everybody, every day, wastes moments, if not hours, which might be devoted to useful ends. "Where there is a will, there is always a way," says the proverb. A systematic arrangement of business, habits of rigid punctuality, and a determination to gather up the fragments, will enable a man to make wonderful additions to his stock of knowledge. The small stones which fill up the crevices have almost as much to do with making the fair and firm wall as the great rocks; so the right and wise use of spare moments contributes not a little to the building up, in good proportions and with strength, a man's mind. Because we are merchants and mechanics, we need not be ignorant of all that lies without the boundaries of the counting-room or the shop. Because the good woman looketh well to her household, she need not to abstain entirely from looking into books. If, to make money, or get a dinner, the mind must be entirely neglected, it were better to be poor and starve. But there is no such necessity as this, as any one may discover, who will, with justifiable avarice, make good use of every "fifteen minutes he has to spare."

FORGOTTEN ARTS.—The ancients were undoubtedly in possession of many secrets which have perished with them. Cleopatra's celebrated dissolution of the pearl in vinegar, which she *drank*, is beyond the power of modern chymistry. The reduction of the golden calf, by Moses, into potable powder, was another effort of the wisdom of Egypt, to which we have made but some doubtful approaches. The Tyrian die, which, according to Pliny, was of the color of our oriental amethyst, has escaped us. The invention of malleable glass, perhaps the most curious and useful legacy to the comforts of posterity, is distinctly stated by Pliny, Petronius, and Diodorus. In the invention of gunpowder, we have been anticipated by the remote antiquity of the Indians and Chinese. The actual recipe for its composition, and the manufacture of a rocket, are detailed by Marcus Græcusa in the eighth century. The only grand invention to which the modern world can lay claim, is printing, and this was borrowed from the Chinese.

THE HAPPY MAN.—The happy man was born in the City of Regeneration—in the parish of Repentance unto life: he was educated in the school of Obedience, and lives now in Perseverance; he works at the school of Diligence, notwithstanding he has a large estate in the country of *Christian Contentment*; and often does jobs of self-denial; he wears the plain garment of Humility, yet has a better suit to put on when he goes to *Court*, called the robe of Christ's Righteousness; he walks in the valley of Self-Abasement and sometimes climbs the mountains of Spiritual Mindedness; he breakfasts every morning on Spiritual Prayer, and sups every evening on the same; he has meat to eat that the world knows not of, and his drink is the sincere milk of the word. Thus happy he lives and happy he dies.



Ruins of the Temple of Diana.—Ephesus.

TEMPLE OF DIANA AT EPHEBUS.

THE temple of Diana at Ephesus was counted as one of the seven wonders of the world, on account of its extent and magnificence, at the period of the birth of Christ. The same rank was held by an earlier temple than that which existed at this time. Xerxes, the Persian king, who destroyed the idol temples wherever he came, spared that one on account of its extreme magnificence and grandeur: but it was set on fire, on the night Alexander the Great was born, and burned to the ground. This was done by a man named Erostratus, who confessed that he had done the deed to immortalize his name by the destruction of this wonderful building. To balk him, it was decreed that his name should never be mentioned; but such a decree served only to make his name more memorable. Alexander offered to rebuild the temple, on condition that the Ephesians would allow his name to be placed in front; but this offer was respectfully declined. The materials saved from the fire were sold, and the women parted with their jewels; and the money thus raised served to carry on the work till other contributions came in. These were sent most liberally from all parts, and in a short time amounted to an immense treasure.

The new temple stood between the city and the port, and was built at the base of a mountain, at the head of a marsh, which situation is said by Pliny to have been chosen as less liable to earthquakes. It however had the effect of doubling the expenses; for vast charges were incurred in making drains to convey

the water that came down the hill into the morass and the Cayster. It is said that in this work so much stone was used as exhausted all the quarries of the country. To secure the foundations of the conduits and sewers, which were to support the weight of so prodigious a structure, Pliny says that there were laid beds of charcoal, well rammed, and over them others of wool, and that two hundred and twenty (or, as some copies read, one hundred and twenty) years elapsed before this grand temple was completed by the contributions of all the cities of Asia (Proper?). It was four hundred and twenty-five feet in length and two hundred and twenty in breadth, supported by one hundred and twenty-seven marble pillars sixty feet high, of which thirty-six were curiously sculptured and the rest polished. The pillars were said to have been the gifts of as many kings, and the bas-reliefs on one of them were wrought by Scopas, one of the most famous of ancient sculptors; and the altar was almost entirely the work of Praxiteles. The first architect, and he who appears to have planned the whole work, was Dinocrates, who built the city of Alexandria, and who offered to carve Mount Athos into a statue of Alexander. There are many coins extant which bear the heads of different Roman emperors, and exhibit on the reverse the temple, with a frontispiece of two, four, six, and even eight columns. It was despoiled and burnt by the Goths, in the reign of the emperor Gallienus. The glory of Ephesus and its temple must, however, have been dimmed before this by the progress of Christianity. The city depended for its wealth upon its temple, which attracted from all parts multitudes

of worshippers: the people knew this; and hence their clamor on the preaching of the gospel by St. Paul, and the effect of the representation made by Demetrius. The city and temple rose and flourished and fell together. The former is now an inconsiderable village; and of the latter nothing remains but some fragments of ruin and some broken columns.

The heathen goddess Diana was primarily the moon, but was worshipped under a variety of names, characters, and forms. The same people sometimes worshipped the different qualities attributed to her, by different names and different impersonations. She was the goddess of hunting, of travelling, of chastity, of childbirth, of enchantments, &c.; and in her different characters she was Diana, Luna, Lucina, Hecate, Proserpine, besides many other names derived from the places in which she was worshipped. Her most usual figure was that of a huntress, with a crescent on her head, and attended by dogs. But the Ephesian Diana was differently represented from any other, being figured with several tiers or rows of breasts—intimating that she was at Ephesus regarded as Nature, the mother of mankind. The image wore a sort of high-crowned cap or mitre; and its feet were involved in the garments. Notwithstanding what the "town-clerk" says, in Acts, xix. 35, about "the image which fell down from Jupiter," it seems that Mucianus, who had been three times consul, and whose authority Pliny follows (lib. xvi. 40), learnt at Ephesus that this famous image was the work of a very ancient sculptor named Canetias. As he further states that the original statue had never been changed it must have been the same to which the "town-clerk" there refers. It seems to have been an ugly little statue, made of several pieces of wood—generally said to be ebony, but Mucianus thought vine-wood—which precludes the otherwise possible idea that the *material* might have fallen from the sky in the form of an *aërolite*; and shows that the priests availed themselves of the remote antiquity and the uncouth form of this image to persuade the people of its divine origin.

A VOICE FROM THE PAST.

It is certain that the mode of settling disputes by sound arguments is superseding that of deciding them by hard blows. Right used to have its knight-errants and mailed champions, who vicariously, or in their own vindication, entered the lists in defence of truth and justice. Men discuss more and fight less, and the club and the spear have yielded to the pen and the tongue. As supply follows demand, so this second reign of Saturn has called into action a class of combatants different from those who signalized the age of physical force. It is not Theseus or Hercules, Guy of Warwick, Amadis de Gaul, or the noble Cid, whose aid the injured seek, but certain braves, denominated gentlemen of the press, who do not use missiles that kill the body, but discharge volleys of paragraphs, aimed often with deadly effect at the ethereal part of the oppressive foe.

Columns of words, not of warriors, fill the arena; reasons, not battalions, are placed in hostile array; interests are weighed, not armor or weapons of mortal strife; and the public voice, not the thunder of the battering-ram or arquebuss, proclaims, in harmonious concord, and without appeal, on which side is the right, that of the victor or the vanquished.

Reflecting on this great change, this superseding of force by intellect, the thought naturally arises, whether many of the corporal struggles of these latter days have not been wasted efforts; whether they have secured a single object which might not and would have been attained by the quiet diffusion of intelligence. France offers on this question a very pertinent illustration. Here she is, after swinging over the fiery gulf for half a century, reposing under a Bourbon, under a constitutional prince, under a representative legislature, under responsible ministers, and under a responsible judicial administration. These are nearly the limits which the Constituent Assembly of 1789 assigned to her, and which the science of the period indicated as her legitimate boundary. All efforts to force her beyond this, apparently her natural position, have proved nugatory. The military glories of the empire were illusive; the alarm and slaughter of her Reign of Terror were fruitless of abiding results. Both fill pages of deep interest in her annals, but the interest arises more from the wildness and stirring character of the incidents, than any lasting influence they have exerted on the progress of the community. They were, in truth, surplusage—a noisy but needless accompaniment in the development of her chief drama; and it may be doubted whether they either averted or essentially altered any of the fixed conditions to which our neighbors seem destined. They lacked steady support in the general taste and sentiment; and, like a pendulum without sustaining power, the impulses, though violent, of necessity ultimately ceased. France, through all the vicissitudes of her civil convulsions, has been seeking a resting-place, and that place seems marked for her, as for every other community, by the weal and knowledge of her people.

Anterior to the burst of the French Revolution, great meliorations were in progress in the chief European states, under the quiet influence of a long peace and inquiring spirit. Whether that event tended to arrest or accelerate their march, is a problem unsuited to our pages to investigate. But it is certain that violence never made such illustrious and influential converts as were made by reason and philosophy. Under the auspices of the chief continental sovereigns, and those of the vast body of men of letters whom they patronised, the character of European society had been changed, partly in its outward forms, in its institutions, laws, and usages, but more in its inward spirit and substance. The influence of a powerful priesthood had been circumscribed; the Jesuits driven out; the monastic orders greatly reduced in number; and the flames of religious persecution quenched in their ashes. The odious practice of judicial torture had been abolished in Germany in 1776 by Joseph II., and his example was

soon after followed by his brother Leopold in Italy. The Spanish Inquisition had been rendered almost innocuous—its last victim being an unfortunate woman at Seville, who, in 1781, was burnt alive for a crime which was absolutely supernatural. In Hungary, Bohemia, and Russia, personal slavery was being gradually alleviated. Agriculture was promoted, and the pursuits of commerce no longer esteemed degrading. Artificial distinctions and titles of honor had still a ceremonious precedence allowed them in private life; but the nobility indulged as little in supercilious pride and exclusiveness as in the barbaric pomp of their feudal predecessors. In competition with the more intrinsic realities of industry, historical recollections had abated of their pride of place; and whatever prescriptive rights might remain to the privileged orders, they formed no impassable barrier to a more equal and kindly intercourse among the different ranks of society.

In England contemporary advances had been made in justice and wholesome policy. There was less of selfishness and monopoly; and the conviction had become apparent, that social benefits, to be enduring, must be common, not partial or exclusive. This spirit was evinced in the new treatment adopted toward Ireland—in unfettering her commerce, in giving greater scope and encouragement to her domestic industry, and in treating her, not as a colonial dependancy subservient only to the greatness of the parent state, but as a partner having co-equal rights, and alike identified in the general prosperity of the empire. While these and many other encouraging circumstances were occurring, all at once a check was given by the riots of Lord George Gordon. By these fanatical outrages, the metropolis was brought to the brink of destruction. People became alarmed at the evidences of ignorance and violence which these disorders afforded; and before the panic had faded from remembrance, out burst the French Revolution in all its unhappy fury. Altars, thrones, and privileges, were all menaced with destruction. Even private property and persons hardly seemed safe. These fears might be groundless, they might be unreasonable, but they existed, and were the means of uniting all possessed of weight and influence in defence of what was termed peace, law, and order. So great was the panic that reason was silenced. No talk of meliorations could be listened to, and the slightest approach to imitation of our Gallic neighbors, in the way of change or amendment, was resolutely opposed, as pregnant with undefinable ruin.

The lesson has often been repeated in subsequent domestic history. Inquiry and discussion have been gradually working their way in the public mind, when their fruits have been lost, or indefinitely deferred by some sudden explosion of popular excess or extravagance. Violence always recoils on itself; unreasonable claims seldom attain their purpose; they only cement and strengthen the power of resistance. These are natural results. If men seek only what is useful, or pertains to them, the common sense and feeling of mankind plead for them, and procures co-operative support; but if they seek that

which is hurtful, or compromise antagonist rights, then they either lose adherents, or rouse into activity and combination, an insurmountable opposition. From these obvious and common-place principles, may generally be predicated the success or failure of every public enterprise. We have only to balance conflicting interests—those likely to be benefited, and those likely to be endangered—to arrive at the ultimate issue of the impending struggle.

According to this test may be tried the remarkable popular agitations which followed in quick succession the general peace of 1815; and, descending from national examples to minor illustrations, derived from the conflicts of capital and industry, we shall find further confirmations of our general conclusions in favor of peace, moderation, and respect for mutual rights. The great contest between machinery and manual industry is now almost a century old. It began with the discoveries of Watt, Wyatt, and Hargraves, soon after the accession of George III. Riots ensued, lives were lost, but opposition was fruitless. Resolutions were drawn up by the chief magistrates and manufacturers, stating that, if the new inventions were not adopted in Lancashire, they would in some other county, or in some other country; so that other people would reap the benefit if they did not. Had the populace been successful in preventing, by tumults, the introduction of the new machinery, it is not likely they could have prevented the introduction of the cheaper commodities it had produced elsewhere. Competition would thus have wrought far more depressive effects on the condition of the spinner and weaver than mechanical ingenuity, and would have involved in its superseding tendency not the operatives only, but their employers, merchants, manufacturers, and tradesmen. This, indeed, is the general law (though we do not recollect to have seen it adverted to before) of all new contrivances for the abridgment of labor. Workmen must meet them either as competitors in the market of labor or as competitors in the market of commodities; in the former case, they may suffer temporary inconvenience, but in the latter both they and their employers are sure to be ruined, with the further disadvantage, that a benefit which science might have conferred on their own town or their own country, is lost without equivalent, and passes to the stranger or foreigner.

A permanent excess in the supply of labor has the same operation on the condition of the workmen as contrivances for its abbreviation. It tends to lower its price, and for this we fear there is no allowable or feasible preventive, except either lessening the redundancy of the commodity in excess, or finding new outlets for its employment. In the work just referred to, the subject is examined in its chief bearings, and many instances given of futile attempts to keep up wages, in the face of an overstocked market of industry, by turnouts and combinations. Of these, the disastrous results seem mostly to have been either to force trade from places where it was thriving, to stimulate contrivances for superseding skilled occupations, or to entail great pecuniary sacrifices on trade-unionists. The last is a serious

and certain consequence, of which there has recently been some bitter experience. In the strikes of late years, there has been expended by the Glasgow cotton-spinners, £47,000; the Manchester cotton-spinners, £375,000; the wool-combers, £100,000; the Leeds mechanics, £137,000. The recent turnouts in Lancashire must have been far more costly than all these, and yet have ended, we regret to say, without satisfactory results either to men or employers—leaving only to both an augmentation of difficulties to contend against.

The commercial and industrial position of that country seems such as not to need any addition to its perplexities by profitless dissensions. Violence, as we have endeavored to show, has rarely or ever abated public wrongs; nor is it likely to do so in the existing juncture. It has seldom achieved, but often frustrated or delayed relief. Discussion and inquiry are the natural resources of a civilized age; and if to these be superadded mutual concession and forbearance, there seems little doubt that both the body politic and the body physical would soon be convalescent.

OF FLOWERS.

FLOWERS are among the most beautiful of the works of nature, gratifying the eye with every variety of shade and color: from the most brilliant and gorgeous to the most modest and retiring; from the splendid tulip, to the pale and modest lily.

The contemplation of a flower-garden is delightful, even as a mere sight and it is peculiarly fitted for young persons. It is, indeed almost discreditable to be unacquainted with the nature and phenomena of these beautiful creations. The habit of contemplating them is exceedingly favorable to virtue and calmness of mind; and some of the wisest and best of our species have been remarkable for their love of this kind of study.

To a fanciful mind there is scarcely any one thing in nature from which a obvious and striking moral may not be drawn. While gazing, for instance, upon a flower garden, how naturally do we compare the difference which is so obvious among flowers, to that which exists among the various individuals of the human race. The tulip, the gaudiest and most gorgeous-colored of all the flowers, is utterly destitute of scent, and completely useless; while some of the most homely looking are characterized by the possession of the most fragrant and powerful odors. The night-violet is beautifully scented, yet it is at the same time one of the meanest, and unattractive in its appearance. A small bed of these will, at dusk of evening, perfume the air for an immense distance round; and yet so little conspicuous are these odorous little flowers, that, unless previously acquainted with their appearance, no one would suspect that the beautiful fragrance sprung from them.

It is similar with mankind. The best and most admirable of our race have frequently less to boast of, as to personal appearance and mere showy ac-

complishments, than the worst and most worthless. The weak, the selfish, the wicked, frequently possess a sufficiency of outward ostentation to attract the attention, and secure the applause, of the thoughtless million. Though destitute of solid ability, such persons frequently possess great address and great presumption; and as the majority of mankind are utterly incompetent to form a rigid and correct estimate of character, false pretensions, which are plausibly set up and boldly maintained, are frequently allowed, when really just ones are opposed or neglected. The truly good and great, on the other hand, rich in wisdom and in virtue, are very frequently modest, even to excessive and painful diffidence.

The tulip, gaudy and conspicuous, has for a season the advantage of the odorous and modest violet: but that season is but a very brief one. The eye soon tires of gazing upon glaring and beautiful colors; and the sight which at first excited admiration, in time becomes irksome, and almost painful. The delicious fragrance of the retiring violet soon attracts the student of nature from the scentless, though splendid tulip; and the good sense of most persons causes them to admit, that if the latter be the more beautiful, the former is by far the more estimable.

Thus also is it with mankind. Though the weak and the worthless may dazzle the world for a time, they can not permanently deceive it; and though the good may for awhile be left in obscurity, which their native modesty induces them to choose, their good works, like the fragrance of the violet, will direct attention to them, and procure them the love and estimation they deserve.

THE LAW OF KINDNESS.—“Don't speak so cross,” said one little boy yesterday in the street to another—“don't speak so cross—there's no use in it.” We happened to be passing at the exhortation—for it was made in exhortatory tone and manner; we set the juvenile speaker down as an embryo philosopher. In sooth, touching the point involved in the boyish difficulty which made occasion for the remark, he might properly be considered as a maturity. What more could Solomon have said on the occasion?—True, he has put it on record, that “a soft answer turneth away wrath,” and this being taken as true—and everybody knows it to be so—it is evidence in favor of the law of kindness over that of wrath.

But our youngstreet philosopher said pretty much the same substantially, when he said “Don't speak so cross—there's no use in't.” No, indeed—there is certainly no use in it. On the contrary, it invariably does much harm. Is a man angry? it inflames his ire still more; and confirms in his enmity him who, by a kind word, and a gentle forbearing demeanor, might be converted into a friend. It is in fact an addition of fuel to a flame already kindled. And what do you gain by it? Nothing desirable, certainly, unless discord, strife, contention, “hatred, malice, and all uncharitableness.” Don't speak so cross—there's no use in't.

NATURAL HISTORY.

The Crane.—*Grus cinerea*.

THE CRANE.

THE body of the common crane is generally of an ashen-gray color, with the throat, the forepart of the neck, and the hind head, dusky; the crest or cap on the head, and also the quills, black. The bird is about the size of a turkey in the body, and weighs about ten pounds, but, from the great length of its legs, it is nearly five feet in height.

Common cranes are very discursive birds, and range seasonally from the north of Europe to the south of Asia, and the north of Africa, and in the latter country they are said to extend their migrations as far as the Cape of Good Hope. On these excursions they fly high in the air, though they experience some difficulty in getting on the wing from the ground. Before taking their spring, they run some paces, raise themselves a little at first, and then unfold a powerful and rapid wing. In the air they form very nearly an isosceles triangle, possibly for the purpose of cutting the element with greater facility. When attacked by an eagle, or the wind is likely to break their order, they close in circles. Their passage frequently takes place during the night, which is known by their sonorous voice, which announces it, and the head of the troop often utters, to indicate the route he is taking, a cry of appeal, to which all his followers answer. Their voices, even on these

nocturnal voyages, are exceedingly loud, probably owing to the length of the windpipe, and the convolution near its bronchial extremity. When they cry during the day they are generally understood to forebode rain, as is the case with the cries of many other birds which feed partially on those worms which the approaching humidity brings to the surface, not only when the rain actually falls, but when, from the changed state of the air, the evaporation is much diminished. When they are peculiarly noisy and tumultuous, and fly near the ground, occasionally alighting, it is considered as a pretty certain indication of a tempest. On the other hand, when they rise high, and fly onward in regular order, it is regarded as a sign of fine weather.

In getting on the wing the apparent difficulty which they experience does not arise from the want of space in which to move their wings, for their legs are sufficiently long for allowing these to act with perfect freedom, even when the feet are firmly on the ground. They appear to run forward, for the purpose of getting an impetus of the whole body; and when that is acquired, they jerk themselves into the air by the elasticity of the legs, and move off in very good style, and they are capable of passing over many miles without alighting. When they assemble on the ground for the purpose of repose, which, after a long flight, they take with the head under the wing,

they have always sentinels appointed to give the alarm in case of danger. Those sentinels stand on one leg, as is also the habit of the storks; and by means of their peculiar structure, this resting on one foot is probably a greater relief to them than resting on both feet, because the balance is then preserved by means of the ligaments which act by their elasticity as matter, and not by living exertion, as is the case with muscles. The distal extremity of the femur, or thighbone, where it articulates with the bones of the leg, has a hollow or depression, which, in ordinary cases, receives a projection of the leg-bones, and when this projection is received into the hollow, the bones, taken together, are shorter than when it is displaced. When, however, this joint, which is the proper knee-joint of the bird, though the tarsal-joint is usually so called, is much bent, the projection slides out of the hollow, and bears upon a more elevated part; by this means the two bones together become longer, which lightens the ligaments, and the resistance of the elasticity of these makes the leg much firmer at this joint than if it were extended; and consequently, the one leg, bent as far as it will bend at this joint, forms a very steady support. Many birds have this structure, and are able to rest on one leg for a considerable time, but none have it in such perfection as the cranes and storks.

The common cranes are understood to build in the northernmost parts of their range, and probably as far to the north as Lapland in some instances. They are very common in Sweden, and particularly abundant in the marshes of Central and Western Russia. In some parts of Poland they invade the crops, especially those of buckwheat, in such numbers, that the farmers find it necessary to employ people to drive them off. The nests are formed in bushes and tufts of tall aquatic plants, close by the margins of the waters. The eggs are only two in number, of a greenish color, and blotched over with brown spots.

The ancients were very familiar with the manners and migrations of these birds, and mixed them up with their superstitions. The positions of the mountains, both in Europe and in Asia, where they approximate the narrow straits which connect the archipelago and the Black sea, naturally bring the whole of the migrant flocks over Greece; and the plains of Thessaly, and the other more fertile parts, were, and are still, their resting-places, after crossing both the northern and the southern seas. In those days the flesh of the crane was a luxury, and it is also recorded among the dishes served up in old times in England. In the old birds it is black and tough, but said to be at least tolerable in the young ones.

The Numidian crane, like most of the birds of the wading order, is migratory in its habits; but it never reaches a high northern latitude, and the environs of Constantinople are the only part of Europe which it is said to visit. It is affirmed, but we know not on what authority, to have been observed as far east as Lake Baikal. The southern coast of the Black sea and the Caspian seem, however, to be its proper Asiatic limits. In Africa, which is truly its native country, it extends along the whole of the Mediterranean and western coasts, from Egypt to



The Numidian Crane.

Guinea, but is most abundant in the neighborhood of Tripoli, and throughout the tract of country which constituted the Numidia of the ancients. It arrives in Egypt in considerable numbers at the period of the inundation of the Nile; and makes its appearance about Constantinople in the month of October, being then probably on its passage from the Black sea toward the south. It is also stated to have been met with in the interior of South Africa, in the neighborhood of the Cape.

Although, in common with the rest of its tribe, it prefers marshy situations, and feeds occasionally upon fishes, insects, and mollusca, a vegetable diet is more congenial to its structure and habits. Its stomach is a true muscular gizzard, like that of the common fowl, and, as in most granivorous birds, contains a quantity of gravel, evidently swallowed for the purpose of assisting in the trituration of the hard substances on which it generally subsists. It consequently prefers seeds and other vegetable productions to every other kind of food. The convolutions of its trachea are less extensive than those of the common crane, and its note is therefore weaker and less sonorous, although somewhat sharper.

The gracefulness of its figure and the elegance of its deportment have always rendered this bird an object of peculiar attraction; no living specimens have been brought to this country, and they have been very rare in England and France. Toward the close of the seventeenth century, the menagerie at Versailles contained six individuals which bred there; and one of the young produced in that establishment lived for four and twenty years. This fact is sufficient to prove that it would not be difficult to acclimate them in the latitude of Paris. They are extremely gentle and good tempered, and speedily become familiarized with captivity, and contented with their condition. It has been remarked that they seem to take pleasure in being noticed and admired, and exhibit themselves on such occasions with a kind of ostentation, making use of gestures which have been construed into bows and courtesies, and jumping about in a kind of artificial dance. To this

somewhat overstrained comparison, Buffon adds, that they are so fond of display, as to prefer the pleasure of exhibiting themselves even to that of eating, and to follow those who are on the point of quitting them, for the purpose, as it were, of soliciting another glance of admiration. For our own parts we must confess that we have never observed, in any of the specimens that we have seen, those symptoms of affectation which may perhaps be obvious to a more lively fancy. Their manners appear to us to differ but little in this respect from those of others of their tribe, the only material distinction consisting in the gracefulness with which they execute motions, that in others are not unfrequently awkward and even ludicrous.



The Crowned Crane.

The crowned crane is a native of Guinea and the neighboring countries ; it is also found at Cape Verd. In a wild state it is natural to conclude that the crowned crane is a migratory species ; but we know little of its habits except in captivity. Like the other cranes, it frequents swampy places, subsists partly upon fishes, worms, and insects, and partly on vegetable substances. At Cape Verd, we are told, it approaches so nearly to a state of domestication as to come of its own accord into the poultry-yards, and feed along with the tame birds confined in them. It perches in the open air to take its rest, and walks with a slow and somewhat stately gait ; but, with its wings expanded and assisted by the wind, it scuds along with great rapidity. Its flight too is lofty, and capable of being continued for a very considerable time.

This beautiful bird measures, when fully grown, about four feet in total height. Its plumage is of a bluish slate color on the neck, and on both surfaces of the body ; the quill-feathers of the tail and the primaries of the wings are white. The fore part of the head is covered by a close tuft of short, smooth, even, velvety feathers of a deep black ; and behind these rises a very remarkable crest, consisting of a large number of flat yellowish filaments, each twisted spirally on itself, fringed along its edges with a series of black pointed hairs, and terminating in a

blackish pencil. These filaments are of nearly uniform length, and measure four or five inches from base to tip. The bill, legs, and feet, are of a dusky black ; and the iris is remarkable for being almost destitute of color.

In captivity it is perfectly quiet and peaceable, readily becomes familiarized with man, and seems even solicitous for his company. When at rest it usually stands, like the other cranes, upon one leg, with its long neck bent inward, and its body supported in an almost horizontal position. But if disturbed in its repose, it lengthens out its neck, brings that, together with its body, into an almost vertical line, and assumes a bold and imposing attitude. Its proper note bears a considerable resemblance to that of the crane, and is compared by Buffon to the hoarse sound of a trumpet. It has also another note resembling the clucking of a hen, but louder and more disagreeable. Grain of all kinds, but particularly rice, forms its usual food in a state of captivity, and it is especially delighted by the occasional addition of a few living fishes.

FIXED STARS.

FIXED stars are called so in reference to their appearance as respects us and other planetary bodies ; but the great mass of all those discoverable are of the same character, and they all have motions, perhaps orbital, like the planets. Motion is indeed universal ; it is the everywhere of existence, and the cause of all phenomena. Although we may have inferred this from our own limited comprehension of things here, yet the telescope has revealed extraordinary facts as to the application of those general and elementary laws of matter and of existences throughout celestial space. Much of that which is known respecting both the nature and revolutions of stars, or the firmaments of worlds that thus fill all space with life and motion, is noticed in this work, but many of their phenomena are not familiar with all.

There is, strictly, a great variety in the relative magnitude of stars, indeed almost as great as is their number ; and, although they have been classified into degrees of size, extending to the 12th order of distances, as regards space and as seen by the naked eye, or by the aid of instruments still further ; yet Leland in his catalogue of 600 of the first magnitude reckoned 126 of intermediate magnitudes. These are not magnified by the telescope as are the planets, but appear with an increased lustre which, with some of those of the first order, as seen in Herschel's largest telescope, was too great to be endured by the eye. Their twinkling is attributed to the paucity of their light in passing to us. They appear somewhat larger to the naked eye than when seen through a tube or instrument and unaided by atmospheric light. We do not see with the naked eye in either hemisphere more than one thousand of these stars, though they appear much more numerous, owing to the confused manner in which they are

viewed. The number, as seen through a telescope, is infinite. The nearest and brightest is the star *Sirius*, estimated to be thirty-two billions of miles distant from the earth; so that it would require seven millions of years for a cannon ball to reach it, constantly flying with a rapidity equal to that which it would have on leaving the cannon. To the inhabitants of *Sirius* our sun appears as a star, and the planetary system revolving around it, of which the earth is one, is unseen, as are those of *Sirius* by us. All the fixed stars are supposed to be centres, or suns, of complete planetary systems. They are classified under six different magnitudes, according to their apparent size to the naked eye; similar ones are called telescopic stars, being seen alone by the aid of an instrument; and their relative magnitudes are thus, as before intimated, greatly increased.

The first catalogue of the stars was made by Hipparchus from his own and the observations of the ancients, and contained 1022; to this number successive astronomers have continued to make additions. Leland completed a list and determined the places of fifty thousand stars, from the pole to two or three degrees below the tropic of Capricorn; and, in a space of only ten by two and a half degrees, Herschel computed two hundred and fifty-eight thousand! Yet still his observations could have added to this number indefinitely. It is not satisfactorily known whether the variety in their appearances is owing to their real magnitude or to their distances, though it is probably attributable to both these causes. But, with respect to their localities, astronomers have defined their places with as much precision as are those of cities and towns upon the earth. Stars which before appeared single have also been discovered to be double, triple, quadruple, and multiple. Herschel completed a list of more than five hundred of these stars, and Professor Struve has added to the number nearly three thousand. The distance of the stars may be conceived by the fact, that the moon actually eclipses two thousand of them at once, that some of the brightest do not subtend an angle of $1''$ and that for the sun to appear less than a second it should be removed one thousand nine hundred times further distant from us. It is conjectured that their distances are nearly inversely as their apparent magnitudes.

Again, although we, in our annual orbit around the sun, are one hundred and ninety millions of miles nearer some of the stars at one time of the year than at another, yet even this immense distance makes not the least perceptible difference in their appearance to us, with the aid even of the most powerful glasses, so trifling is it when compared with that of the nearest star; and, though light moves at the rate of twelve millions of miles a minute, or one hundred and ninety-two thousand nine hundred miles in a second of time, yet, according to correct data, more than a year is required for the light from the nearest stars to reach our earth, and from the telescopic stars even hundreds of years! so that the light by which they are visible to us is many and even hundreds of years old! Some faint idea may, perhaps, be gleaned from the following analogous representation.

Suppose the earth a globe one foot in diameter, the sun's distance would be about two miles, its diameter about one hundred feet, or twice the size of the largest dome of the capitol at Washington, and the moon would be 30 feet from us, with a diameter of three inches. Jupiter would be ten miles, and Uranus forty miles distant, and the nearest of the fixed stars might be the distance of the moon, or two hundred and forty thousand miles! Our highest mountains would then be one eightieth part of an inch, and therefore barely perceptible to the naked eye; and man, with all else indeed on the earth, would be as the finest bloom on a plum, or the thin dust upon a globe.

We might, again, for illustration, go down to the infinitesimal and invisible objects of the microscopic world, and to aid the mind, draw comparisons from the animalculæ and infusoria, millions of which float in a drop of water, or whose attenuated structures compose the solid limestone masses of the mightiest mountains. Herschel concluded that the distance of even the nearest star can not be so small as 48,000,000,000 radii of the earth, or 192,000,000,000 miles! Dr. Walaston, by a comparison of the light of *Sirius* with that of the sun, ascertained that when the light from either reached the earth, that of the latter is twenty billions more intense than that of the former; and that for the sun to appear no brighter than *Sirius* it should be removed one hundred and forty-one thousand four hundred times further distant than it now is. He calculated the distance of *Sirius* from the sun to be such that its own light must be equal to *fourteen suns*!

Although we might despair of determining satisfactorily the distance of the stars by their parallaxes or otherwise, except those perhaps of the nearest, yet Arago the present distinguished French philosopher and astronomer, has suggested a method of fixing that of the binary or triple stars, which should be noticed. A binary star, for example, disclosing to the observer nearly its edge, would, during half of its revolution, recede from him, and during the other half would continually approach toward him. Now, if the light of that star were thirty days in travelling from the nearest part of its orbit to our earth, it would be more than that time in passing from its most distant part; the difference, therefore, between the apparent and the calculated time, from the nearest and the most distant points of its orbit, even though it were but a few seconds, would furnish data by which to determine its distance. Thus, it will be perceived, that the semi-revolutions of the star differ by the double of the time required for the light to pass across its orbit, and half of that difference in seconds, multiplied by the number of miles which light travels in a second—say 200,000—will give to the observer the diameter of the orbit, and from this he may easily calculate the distance from the earth. In view of this M. Arago well observes: "The day in which the distance of a double star is determined, will be the day in which it may be weighed, and in which we shall know how many millions of times it contains more matter than our globe. We shall then penetrate into its internal

constitution, though it may be removed from us more than 120,000,000,000,000 of leagues !”

“ How distant some of the nocturnal suns !
So distant, says the sage, ’twere not absurd
To doubt that beams set out at Nature’s birth
Had yet arrived at this so foreign world,
Though nothing half so rapid as their flight !”

The different colors of the stars, as alluded to by the author, is likewise a remarkable phenomenon, as well also as the changes in their situation, fifty of which were discovered by Herschel among the double stars. In one instance of the combinations—in the Lion—the revolution of stars around each other requires a period of no less than twelve hundred years. In the double star Castor, also, the revolution of one around the other during fifty years has had a rotary motion of one degree a year without any alteration of the interval of 5" between them. Many of the double stars are likewise observed to have different colors, as, for example, that of Bootes, one of which is a light red, while that of the other is a fine blue ; and the period of the latter’s revolution was also discovered to be sixteen hundred and eighty-one years ! That of Herculis, being double, presents the larger of the two of a beautiful bluish-white, while the smaller is a rich ash color. The smaller star of Serpentis makes a revolution around the larger in a period of three hundred and seventy-five years ; and the same in the double star Virginis in seven hundred and eight years ! Nor are the strange changes which these and numerous other stars have undergone in their color, brightness, position, and other circumstances, less worthy of remark ; but a note is quite too limited to give even a notice of them. The more curious reader is, therefore, referred to Herschel’s and other late works on the subject.

LANGUAGE OF BIRDS.

NATURALISTS and others have always amused themselves by tracing fancied resemblances between the notes of certain birds, and certain words of our language. These resemblances, however, are generally more fanciful than real, and other words might be substituted with equal propriety. Thus we are informed by Nuttall that the bird which utters *whippoorwill* in such plain English to our ears, is called *wecoalis* by the Delaware Indians, for similar reasons. Indeed, these resemblances of sound between the notes of birds and the words of a language exist rather in rhythm and accentuation than in any distinct articulation of syllables. In their notes we often very plainly distinguish vowels and aspirates, but consonants very seldom ; except those cases in which the bird, like certain parrots, has actually learned to talk.

Superstition has imagined the whippoorwill’s notes to be ominous of disaster ; and many are the dismal tales that are told of deaths and misfortunes which have succeeded his nocturnal visits under the windows of the ill-fated dwelling. “ But if,” says Nuttall, “ superstition takes alarm at our simple and

familiar species, what would be thought by the ignorant, of the South American kind, large as a wood owl, which in the lonely forests of Demarara, about midnight, breaks out, like one in deep distress, and in a tone more dismal even than the painful hexachord of the slothful Ai. The sounds, like the expiring sighs of some agonizing victim, begin with a high, loud note, “ *ha, ha, ha, ha, ha ! ha ! ha !*” each note falling lower and lower, till the last syllable is scarcely heard, pausing a moment or two between this reiterated tale of seeming sadness. Four other species of the goat-sucker, according to Waterton, also inhabit this tropical wilderness, among which is also included our whippoorwill. Figure to yourself the surprise and wonder of the stranger, who takes up his solitary abode, for the first night amid these awful and almost interminable forests, when at twilight he begins to be assailed familiarly, with a spectral, equivocal bird, approaching within a few yards, and then accosting him with “ *Who-are-you, who, who, who-are-you ?*” Another approaches, and bids him, as if a slave under the lash, “ *Work-away, work, work, work-away !*” A third mournfully cries, “ *Willy-come-go ! willy-willy-willy-come-go !*” — and as you get among the highlands, our old acquaintance vociferates, “ *Whip-poor-will, whip-whip-whip-poor-will !*” It is not, therefore, surprising that such unearthly sounds should be considered in the light of supernatural forebodings, issuing from spectres in the guise of birds.”

There is another bird of this species, called “Chuck-will’s-widow.” It commences a series of notes resembling these words, soon after sunset, and continues them at intervals, for several hours. In ceases about midnight, and commences again just before the break of dawn. It is silent during the day. The owls are another species of birds whose notes have been construed into language. They also have been regarded as birds of ill-omen, and messengers of bad tidings, both in the old and new world. The Athenians, among the ancients, however, regarded the owl with veneration, and consecrated it to Minerva, the goddess of wisdom. The Romans, on the contrary, viewed this bird with detestation, and held it sacred to Proserpine, the Queen of Hades. There is a species of owl, called the snowy owl, found in America as high as Hudson’s bay, frequenting woody districts, and uttering a most hideous noise in the woods, not unlike the hallooing of a man, so that travellers are often beguiled by it, and lose their way. The little screech owl inhabits all parts of the United States, and is celebrated for his dismal notes. His voice is heard early in the morning, crying in a plaintive and shrieking tone, “ *hoo, hoo, hoo, hoo, hoo, hoo, hoo,*” beginning high and sinking into a low tremulous sound. Others respond to these notes at a distance, and they are often kept up during the whole of the night. We must not omit to mention the great cat owl, the king of the night-birds of America. The aborigines are said to have dreaded his ominous howl, as portentous of misfortune. This owl often visits the camp-fires, that are built by travellers in the American wilderness, attracted by the blazing light. Travellers are said to interpret

the notes which he utters on these short visits, as follows—"Who-cooks-for-you-all?" These words are rather inquisitive, but not at all calculated to excite alarm.

There is an owl whose notes are said to resemble the howling of the wolf; hence its name, *ulula* among the Romans. The cry of the young bird draws his prey around him, when he seizes upon them as a reward for their curiosity. The little owl has a repeated cry, when flying, like *poo-poo-poo-poo*. Another note is uttered sitting, which resembles the human voice, calling out *aime, heme, edme*. This bird, according to Buffon, deceived one of his servants who lodged in one of the old turrets of the castle of Montbard. Being waked up at three o'clock in the morning by this singular cry, he opened the window and called out, "Who's there, below? My name is not Edme, but Peter!" Nuttall says that a superstitious legend prevails in the north of England that Pharaoh's daughter was transformed into an owl. Hence the common distich:

"I was once a king's daughter, and sat on my father's knee;
But now I'm a poor owlet, and hide in a hollow tree!"

The bobolink, or conquedle, is celebrated throughout New England for the great variety of speeches attributed to him. He is a great chatterer, and always seems to be talking with rapidity while he is singing. Some of his notes certainly bear a resemblance to the word which is given to him as a name. Among the ludicrous phrases which he is often heard to utter, the following dialogue is given. Bobolink spies one of his comrades half buried in the tall grass, and soaring above him, he vociferates: "Winter seeble, winter seeble, conquedle, conquedle, hid in the clover, come pay me, come pay me, you've owed me seven-and-sixpence more than two weeks, and now you mean to cheat me!" Upon hearing this, conquedle rises up with quivering wing from his hiding place, and cries out with exulting voice, as he poises himself in the air: "Wadolink, wadolink, whiskodink, whiskodink, dance a single jig, I've nothing for you, watchee, watchee, say another word to me and you may whistle for it all your life-time!"

Not only the wild birds, but our domestic poultry are occasionally heard to make some very significant remarks. It is a remarkable fact, that the common ducks invariably call out "*Quack, quack, quack*!" whenever a doctor's sulkey passes by their flock. But the most extraordinary of all the speeches of the feathered tribe, is that of chanticleer, which may be regarded as deciding a controversy that has long been waged in the civilized community. Old chanticleer awakes in the morning, flaps his wings, and vociferates, at the top of his voice, "*Women rule h-e-r-e*!" Immediately from a neighboring roost, another answers, "*So they do h-e-r-e*!" This is no sooner uttered, than a third responds, at a considerable distance, "*So they do every w-h-e-r-e*!"

I will conclude with that interesting little bird, called the wood pewee, an inhabitant of our woods, that seems like some benighted wanderer, about from tree to tree, and crying, "*Pee-a-wee, pee-a-wee*," in such a plaintive manner as to attract your attention

more than the sweetest warbling. Sometimes he seems to be actually imploring your sympathy, and endeavoring to relate to you his grievous misfortunes.

MISDIRECTED EFFORTS.

It has often been said, with respect to the people of the present day, that living in the full enjoyment of the wealth which the intellect and genius of other ages have left, with that which modern investigation is continually throwing around them, they are inclined to place too high a value upon the cultivation of the intellectual powers alone, as pre-eminent, and superior to all others. The remark is perhaps true, but the mere acknowledgment of the fact is far from freeing us from the guilt of the charge; indeed, we are only the less excusable for misusing the very light which is around us. We boast of the boundless range of thought, the mighty achievements of mind; we point to the history of other times as erasing the triumph of its powers, while we forget that upon the same page whereon is recorded the wisdom of the early sage, the song of the heaven-inspired poet, is traced the melancholy story of intellect, when, trusting its own strength, it has passed the limits assigned it, and, prompted by a misguided fancy, has soared, Titan-like, to the penetration of mysteries which must ever be beyond its reach. The story is melancholy; for such is the veneration ever paid the advances of mind, that rarely has such an event occurred without leaving its mournful effects upon the present and even future destiny of thousands. In every age of the world, whether the prevailing feature of the time has been more or less decidedly in favor of advancement in civilization, some men have arisen to whom has been committed the mighty trust of swaying the minds and destinies of those around them. Endowed by nature with a more potent sceptre than was ever wielded by the mere monarch who controls the political interests of a nation, in whatever enterprise they have engaged they have ever commanded the willing and firm allegiance of the people. And it is a fact, attested by innumerable instances, that this superior sovereignty has too often been made the successful agent for promoting the most wild and visionary schemes. Such is the strange thirst of the public mind for something new, that it needs but the sanction of one, or at most a few, acknowledged to hold some higher claim than the rest to secure the ready zeal and blind devotion of the many. Among the earliest nations, we find the existence of the same spirit in many a relic of misdirected genius and skill, which has survived the wreck of their political institutions. Science, philosophy, and religion, each has wandered in its progress to the same deceitful shrine, and buried its precious incense for awhile with the smouldering ashes.

Years have fled since the world listened in breathless suspense to the oracle that promised the realization of the wildest hopes, the boldest, most daring scheme—the discovery of a secret hidden by the Deity deep in the bosom of his creation, nothing less

than the searching out of the grand principle on which a universe is based. This precious solvent once within the grasp of man, and the brow of age should be smoothed of all its furrows, the palsied arm should be restrung and the trembling frame clothe itself in the vigor of youth, pain and disease should be exchanged for the bloom of Paradise, and men should never more lie down within the narrow coffin and the grave. By this all-powerful solvent too, gold—man's blessing and his curse—should be at the beck of science and obey the voice of her self-constituted priest. Long years have passed and the science of alchymy now lies buried under the weight of ridicule and contempt so justly heaped upon it. Yet, what shall atone for the mind wasted, the lives spent in this fruitless search? The weary student bent over his crucible, and dreamed and hoped till he grew old beside it, and when life, like his midnight taper, went out, one tantalizing thought haunted the old man in his death struggle, that if to his children he might bequeath the lore which had cost him a lifetime of toil and self-denial, it would need but one more effort to secure the treasure! Alas! even hope died at last when at every grasp the golden fruit, which had been hanging so long and temptingly, receded only farther and farther, and left nothing but a life wasted in feverish anxiety and despair.

Though centuries had elapsed since appeared the first *magician*, during which empires rose and fell, yet man still remained the same creature of impulse and excitement, and as late as the fifteenth and sixteenth centuries, men trembled at the miracles and mysteries of the occult science. Now however so far from standing aghast when the name of Cornelius Agrippa is mentioned, we find him almost buried in the mass of mind crushed before the same altar, a single instance among the millions, of a life spent in vain and fruitless effort.

Yet never perhaps has the case been more striking in which the human mind has bent all its energies and powers to the accomplishing of an unworthy object, than when that object has drawn upon itself the veil of religion, and enforced its claims by appealing to the hopes and fears of the wavering populace. Reason, in such cases bows to superstition and enthusiasm, and the object is rarely relinquished until each individual lays a finger on the phantom to test its reality, or, until it is lost in the glare of a newer if not a greater one. Once the chivalry of Europe put on the symbol of the cross, and, for one holy relic, traversed broad lands and waters, endured the deepest sufferings, fought, bled, and at last laid down in death beneath a foreign soil, perchance unmourned but by a little circle, that, gathered around the hearth-stone, hoped and hoped in vain. For centuries the richest blood of Christendom mingled with that of infidels, and enriched the land of the vine and olive tree, and the last crusade ended as the first began. True this effort produced some good; commerce and the arts and sciences received a new impulse, and poetry, like a beautiful spirit, sprang upward from the sacrificial ruins. But could this atone for wasted treasure, wasted time, wasted talent, and wasted life-blood? How slight in comparison

the effort, which, if well directed, would have produced all these happy results, and taken but few years from those centuries that extinguished successively almost every light by themselves enkindled.

It is useless to speak of the thousand other projects, not less visionary, but perchance less serious in their consequences, that have by turns agitated individuals and nations. Of the many dreams cradled among the mysteries of the new world, none could be less productive of evil than that of the gallant band, who accompanied by the sanguine Hernando de Soto, sought long and unweariedly for the famed "fountain of youth." Ah! *age* came upon them in the very search, and now their dreams lie buried with them in the silence of the grave. But they were not the last dreamers.

Years have passed, and we who now behold these events in their true light, wonder that objects which were but the creation of passion or disordered imagination, which bear in almost every feature the marks of bewildered extravagance, should have engaged the attention of sober, thinking men, and wasted for ever those efforts of intellect and genius, which if more wisely directed might have served to enrich the stores of social happiness, and throw a more beautiful light upon humanity.

But we pause, even while we wonder, for who shall say of us that we are guiltless of that which in other ages we so readily condemn? On the contrary, there is too much reason to believe that after years will prove us to have added to the record of ill-directed research, and talent misapplied. The *future* only may tell whether many of the theories which are causing so much excitement at the present day, the crude notions which we dignify by the name of sciences, may not be in themselves equally absurd, and involve consequences quite as sad as any that have preceded them.

Surely then, the very least we may infer is, that with the increased light of science and religion, and the experience of the past world before us, we shall be held most deeply responsible for every instance in which we may wilfully or carelessly assent to that which requires the closest investigation and reflection, with the aid of sound, unbiased *reason*, that heavenly gift which, under the gentle guidance of *religion*, may alone direct and attune the energies of the human mind, and render it "meet for the inheritance of the saints in light."

THE WONDERS OF STEAM.

If we contemplate the past history of man, we shall find that, with a few insignificant exceptions, the race has been, as it were doomed to support an existence surcharged with misery. From the earliest period of recorded time, we behold the great mass slaves to an organized despotism which a few crafty spirits entailed upon the species—a despotism both mental and physical—to subdue the body and enthrall the mind—political and ecclesiastical despotism.

To the neglect of mental cultivation alone, these evils are to be attributed ; for in every age men have had the same elements of prosperity and of happiness. The earth and its treasures have always been at their disposal, and the natural capacities of the human intellect, have probably always been the same. It is the improvement of these capacities by culture, and their degeneracy by neglect, that makes all the difference in men's condition. The horrible sufferings of the myriads of human beings who have passed through a life of unceasing and unrequited toil, were owing to their ignorance, and hence the tyrants of the earth have always labored, and still labor, to keep those uninformed that are subject to their sway. Ignorance was the grand engine by which the most atrocious systems of tyranny, superstition, and magic, were established in ancient times ; and whose influence are not yet done away.

But within the last two centuries a new era has opened with brighter prospects for the human family at large, than has ever yet dawned upon it. An era that has been ushered in by the discovery, or rather application, of a new motive-agent, viz., steam. The wonderful effects which this fluid has been made to produce, are so creditable to the human intellect, and so fraught with consequences of the highest import to our race in all times to come, as to excite even in the most torpid minds, emotions of stirring interest. Steam is changing everything, and everything for the better. It has opened new sources of social and individual happiness ; nor is its influence confined to the physical condition of man, for by its connexion with the manufacture of paper and with the printing press, it has done more to rouse and exercise the moral and intellectual energies of our nature than anything else ; and has imparted a vigorous impulse to them, as well as to the useful arts.

What a proof is steam of the store of motive-forces that are to be found in the inorganic world ! Forces that can render us incalculable service, if we would but open our eyes to detect, and exercise our energies to employ them. Who could have supposed two centuries ago, that the simple vapor of water would ever be used as a substitute for human exertions, and should relieve man from a greater portion of the physical toil under which he has groaned from the beginning of the world—that it would arm him with a power which is irresistible, and at the same time the most pliant—one what can uproot a mountain, and yet be controlled by a child ! Who could have then imagined that a vessel of boiling water should impart motion to machinery in every department of the arts, and be equally adapted to all—should spin and weave threads fine as those of the gossamer ; and forge tons of iron into single bars with almost equal rapidity and ease—raise water from mines, in streams equal to rivers, and extract mountains of mineral from the bowels of the earth—should propel carriages, such as no horses could move, with the velocity of wind, and urge ships of every class through the ocean, in spite both of winds and waves—should be the means of circulating knowledge at the price of waste paper, and of awakening and

stimulating the mental capacities of men !—in a word, that a little aqueous vapor should revolutionize the whole social and political condition of man : and that, after having done all this, it should probably give place to another agent, still more powerful and beneficial, which science and observation should discover.

What a proof is steam of the high destiny that awaits our species ! The most fervid imagination can not realize the importance of those discoveries in science and the arts, of which it is merely the forerunner ; the first is that new catalogue of motive-agents that are ordained to change the condition of men, and to regenerate the earth ; for all that is yet done is but as the twilight that ushers in the orb of day. Hitherto man has been comparatively asleep, or in a state resembling it—insensible of the rich inheritance which the Creator has placed at his disposal in the elastic fluids, and of their adaptation to impart motion to every species of mechanism. How few persons are aware that the grand invention of imparting motion to a piston by steam and other elastic fluids, is the pivot on which the chief affairs of the world is destined hereafter to turn ! And the time is not distant when, by means of it, the latent energy of the gases, or other properties of inert matter, will supersede, in a great degree, the drudgery of man—will perform nearly all the labor which the bones and sinews of our species have hitherto been doomed to accomplish. There are persons, however, with minds biased by the eternal bondage in which the mass of our race has always been held, who will startle at the idea of the whole becoming an intelligent and highly intellectual body. They can not conceive how the affairs of life are to be continued—the execution of innumerable works which the constitution of society requires should be performed, if these helots become free. But can they, can any one, seriously believe that the all-wise and benevolent Creator could possibly have intended that the highest class of beings which he has placed on this planet—the only one capable of appreciating his works and realizing correct ideas of his attributes—that the great portion of these, should pass through life in incessantly toiling for mere food ;—and undergoing privations and sufferings to obtain it, from which the lowest animals are exempt ? Assuredly not. Had such been his design, he would not have created them with faculties expressly adapted for nobler pursuits.

—
LENGTH OF DAYS.—At Berlin and London, the longest day has sixteen and a half hours. At Stockholm and Upsal, the longest has eighteen and a half hours, and the shortest five and a half. At Hamburgh, Dantzic, and Stettin, the longest day has seventeen hours, and the shortest seven. At St. Petersburg and Tobolsk, the longest has nineteen, and the shortest five hours. At Torneo in Finland, the longest day has twenty-one hours and a half, and the shortest two and a half. At Waudorbus, in Norway, the day lasts from the 21st of May to the 22d of July, without interruption ; and in Spitzbergen, the longest lasts three and a half months.

EXAMPLES FOR YOUNG MEN.

INTELLIGENCE, knowledge, and good principles, are the basis on which character and usefulness are reared. And in this country, intelligence is within the reach of all persons of every class. The press now offers facilities for the acquisition of knowledge to the day laborer, to the mechanic, to families in every condition of life, on terms which they can afford from the avails of their labor. Attention, inquiry, and habits of application, are the price which they must pay for the prize. Great men are self-made men. The sphere they occupy in life, depends, under God, on their own efforts. To the young, these views are important. The qualifications for stations of great usefulness in the world, are not beyond the reach of the sons of the poor. These remarks are illustrated in the following extract from a lecture delivered before the Young Men's Association of Troy, by the Rev. Mr. Murray :—

"Sir Edward Saunders, chief justice of England in the reign of Charles the Second, was once a poor beggar-boy strolling about the streets without any knowledge of his parentage. Sir Thomas Gresham, who, under the patronage of Elizabeth, became the founder of the Royal Exchange in London, was the son of a poor woman, who, while he was an infant, abandoned him in the fields. And his life was preserved by the chirping of a grasshopper, which attracted a little boy to the place where he lay. Nicholas Saunderson the celebrated mathematician, lost his sight when he was a year old, by the smallpox. Assisted by his friends, he pursued his studies. He became lecturer on optics in Cambridge; he was the bosom friend of Newton; he was elected professor of mathematics; and is one of the most acute and learned commentators of the principia. Our own Hamilton was the office-boy and runner of his patron. William Jones, the friend of Madison and Jefferson, once secretary of the navy, and president of the United States bank, served his apprenticeship to a ship-builder.

"Nor let it be said that for its acquisition you have no time. This is not true. Think of the time that you trifle away! After the labors of the day are ended, how do you spend your evenings? When business is dull, and leaves at your disposal many unoccupied hours, what disposition do you make of them? I have known, and now know, many young men, who, if they devoted to any scientific, or literary, or professional pursuit the time they spend in games of chance and lounging in bed, and in idle company, might rise to any eminence. You have all read of the sexton's son who became a fine astronomer, by spending a short time every evening in gazing on the stars, after ringing the bell for nine o'clock. Sir William Phipps, who at the age of forty-five had attained the order of knighthood, and the office of high sheriff of New England, and governor of Massachusetts, learned to read and write after his eighteenth year, and while learning the trade of a ship-carpenter, in Boston. William Gifford, the great editor of the Quarterly, was an apprentice to a shoe-

maker, and spent his leisure hours in study, and because he had neither pen nor paper, slate nor pencil, he wrought out his problems on smooth leather, with a blunted awl. David Rittenhouse, the American astronomer, when a plough-boy, was observed to have covered his plough and the fences with figures and calculations. James Ferguson, the great Scotch astronomer, learned to read by himself, and mastered the elements of astronomy while a shepherd's boy, in the fields by night. And, perhaps, it is not too much to say, that if the hours wasted in idle company, in vain conversation, at the tavern, were only spent in useful knowledge, the dullest apprentice of any of your shops, might become an intelligent member of society, and a fit candidate for most of our civil offices. By such a course the rough covering of many a youth might be laid aside; and their ideas instead of being confined to local subjects and professional technicalities, might range throughout the wide fields of creation; and other stars from men of this city, might be added to the bright constellation of worthies that is gilding our country with bright yet mellow light."

VALOR.—Of all the qualities possessed by man which serve to make up the sum of his metaphysical nature, none seem to have held a higher place in the consideration of mankind than the peculiar ardor and temperament, known by the name of valor. Society, in every clime, in every state of government, has always considered this quality as the most important, to cherish and support—every ruler, every sage to whom the world has been indebted for those lessons of wisdom and humanity, which have had such a bright influence upon our destinies, has praised it—every glowing poet, who, adding elegance to utility, has preserved the dicta of the philosopher (their harshness softened by the charms of verse upon this subject), whatever his tongue, hath not failed to pour forth his most enthusiastic eulogy, to enwreath it with the brightest flowers of poesy. Yet, amid this general approbation and approval, it is a matter of no small difficulty to understand accurately what is the precise nature of valor. Sometimes it is rashness, sometimes it arises from the height of self-love, and not unfrequently, from the manner and avaricious desire to strive suddenly at the apex of fortune. Yet more, it may have its origin in shame and ridicule, in dread of reproach, or even in the degrading fear of punishment. But this we know, and the experience of mankind fully confirms the fact, that the God-like quality of retiring, modest, yet firm and unchangeable courage, is the very salt of life, which teaches us, while resisting the encroachments of tyranny and power, to contain ourselves—which gives peace, confidence, and serenity of mind, and from which have ultimately sprung the endless varieties of arts, sciences, enjoyments, and innocent pleasures, which happily characterize the existence of the civilized and educated man.

AERIAL NAVIGATION.

"A Balloon is a new-born infant; no man can foretell what it may come to."—DR. FRANKLIN.

WE have much pleasure in furnishing the public with an account of aerial navigation, by means of balloons. In it we have recorded some of the most extraordinary and interesting attempts made in aërostation; and while, on the one hand, we have endeavored to embody together all the information that we thought could prove of utility or entertainment to the reader upon the subject; on the other hand, we have essayed to illustrate it in an ample manner.

AIR BALLOONS.—An air balloon consists of a bag filled with air so light, that it, together with the bag, forms a mass specifically lighter than the common atmosphere. By heating a quantity of air, to two hundred degrees of Fahrenheit, you will just double its bulk, when the thermometer stands at fifty-four, in the open air; and in the same proportion you will diminish its weight. And if such a quantity of this hot air be enclosed in a bag so that the excess of the weight of an equal bulk of common air weighs more than the bag with the air contained in it, both the bag and the air will rise, and continue to do so till they arrive at a place where the external air is naturally so much rarefied that the weight becomes equal, and the whole will float. The romances of almost every nation have recorded instances of persons being carried through the air, both by the agency of spirits and by mechanical inventions; but till the time of the celebrated Lord Bacon, no rational principle appears ever to have been thought of, by which this might be accomplished. Before that time, indeed, Friar Bacon had written upon the subject; and many had been of opinion, that, by means of artificial wings, fixed to the arms or legs, a man might fly as well as a bird: but their opinions were thoroughly refuted by Borelli. It can not be denied, however, that wings of this kind, if properly constructed, and dexterously managed, might be sufficient to break the fall of a human body from a high place, so that some adventurers in this way might possibly come off with safety; though by far the greatest number of those who have rashly adopted such schemes have either lost their lives or limbs in the attempt. In the year 1709, however, as we are informed by a letter published in France, in 1784, a Portuguese projector, Friar Gusman, applied to the king for encouragement to his invention of a flying machine. The principle on which it was constructed, (if indeed it had any principle), seems to have been that of a paper-kite. The machine was constructed in form of a bird, and contained several tubes through which the wind was to pass, in order to fill a kind of sails, which were to elevate it; and when the wind was deficient, the same effect was to be performed by means of bellows concealed within the body of the machine. The ascent was also to be promoted by the electric attraction of pieces of amber placed in the top, and by two spheres enclosing magnets in the same situation! These childish inventions show the low state of science at that time in Portugal, especially as the king, in order to encourage him to farther exertions

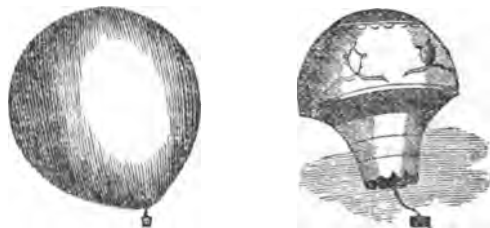
in such a useful invention, granted him a cancy in his college of Barcelos or Santa, the professorship in the University of Coimbra an annual pension of 600,000 rées, during 1. Of this De Gusman, it was also related, that, year 1736, he made a wicker basket of about seven or eight feet diameter, and covered it with paper, which raised itself about two hundred feet in the air, and the effect was generally attributed to witchcraft. In the year 1766, Mr. Henry Cavendish ascertained the weight and other properties of inflammable air, determining it to be at least seven times lighter than common air. Soon after which, it occurred to Dr. Black, that, perhaps a thin bag filled with inflammable air might be buoyed up by the common atmosphere! and he thought of having the allantois of a calf prepared for this purpose; but his other avocations prevented him from prosecuting the experiment. The same thoughts occurred some years afterward to Mr. Cavalli; and he has the honor of being the first who made experiments on the subject. He first tried bladders; but these, however well separated and prepared, were found too heavy. He then tried Chinese paper; but that proved so permeable, that the vapor passed through it like water through a sieve. His experiments, therefore, made in the year 1782, proceeded no farther than blowing up soap bubbles with inflammable air, which ascended rapidly to the ceiling, and broke against it.

BALLOONS ELEVATED BY MEANS OF FIRE.—Two brothers, Stephen and John Montgolfier, natives of Annonay, and masters of a considerable paper manufactory there, had turned their thoughts toward this project as early as the middle of the year 1782. The idea was first suggested by the natural ascent of the smoke and clouds in the atmosphere; and their design was to form an artificial cloud, by enclosing the smoke in a bag and making it carry up the covering along with it. Toward the middle of November, in that year, the experiment was made at Avignon, with a fine silk bag of a paralleloiped shape. By applying burning paper to the lower aperture, the air was rarefied and the bag ascended and struck rapidly against the ceiling. On repeating the experiment in the open air, it arose to the height of about seventy feet. An experiment on a more enlarged scale was now projected; and a new machine, containing about six hundred and fifty cubic feet, was made, which broke the cords that confined it, and rose to the height of about six hundred feet. Another of thirty-five feet in diameter rose about one thousand feet high, and fell to the ground three quarters of a mile from the place where it ascended. A public exhibition was next made on the fifth of June, 1783, at Annonay, where a vast number of spectators assembled. An immense bag of linen, lined with paper, and containing upward of twenty-three thousand cubic feet, was found to have a power of lifting about five hundred pounds including its own weight. The operation was begun by burning chopped straw and wool under the aperture of the machine, which immediately began to swell; and after being set at liberty, ascended into the atmosphere. In ten min-

utes it had ascended six thousand feet; and when its force was exhausted, it fell to the ground at the distance of seven thousand six hundred and sixty-eight feet from the place whence it set out. Soon after this, one of the brothers arrived at Paris, where he was invited by the academy of sciences to repeat his experiments at their expense. In consequence of this invitation he constructed, in a garden in the fauxbourg of St. Germain, a large balloon of an elliptical form. In a preliminary experiment, this machine lifted up from the ground eight persons who held it, and would have carried them all off if more had not immediately come to their assistance. On the next day the experiment was repeated in presence of the members of the academy; the machine was filled by the combustion of fifty pounds of straw made up in small bundles, upon which about twelve pounds of chopped wool were thrown at intervals. The usual success attended this exhibition. Along with this machine was sent a wicker cage, containing a sheep, a cock, and a duck, which were the first animals ever sent through the atmosphere. The full success of the experiment was prevented by a violent gust of wind, which tore the cloth in two places near the top before it ascended. However, it rose to the height of fourteen thousand and forty feet; and, after remaining in the air about eight minutes, fell to the ground at the distance of ten thousand two hundred feet from the place of its setting out. The animals were not in the least hurt.

FIRST AERIAL ADVENTURE.—As M. Montgolfier proposed to make a new aerostatic machine of a firmer and better construction than the former, M. Pilatre de Rozier offered himself to be the first aerial adventurer. This new machine was constructed in a garden in the fauxbourg of St. Antoine. It was of an oval shape, about forty-eight feet in diameter, and seventy-four in height; elegantly painted on the outside with the signs of the zodiac, ciphers of the king's name, and other ornaments. A proper gallery, grate, &c., were appended, so that it was easy for the person who ascended to supply the fire with fuel, and thus keep up the machine as long as he pleased. The weight of the whole apparatus was upward of sixteen hundred pounds. The experiment was performed on the 15th of October, 1783. M. Pilatre having placed himself in the gallery, the machine was inflated, and permitted to ascend to the height of eighty-four feet, where he kept it afloat for about four minutes and a half; after which it descended very gently, and such was its tendency to ascend, that it rebounded to a considerable height, after touching the ground. Two days after, he repeated the experiment with the same success as before; but, the wind being strong the machine did not sustain itself so well as formerly. On repeating the experiment in calmer weather, he ascended to the height of two hundred and ten feet. His next ascent was two hundred and sixty-two feet; and, in the descent, a gust of wind having blown the machine over some large trees of an adjoining garden, M. Pilatre suddenly extricated himself from so dangerous a situation, by throwing straw and chopped wool on the fire, which raised him at once to sufficient height.

On descending again, he once more raised himself to a proper height, by throwing straw on the fire. Sometime after, he ascended in company with M. Girond de Vilette to the height of three hundred and thirty feet, hovering over Paris at least nine minutes, in sight of all the inhabitants, and the machine keeping all the while perfectly steady.



Balloons of Montgolfier.

These experiments had shown, that the aerostatic machines might be raised or lowered, at the pleasure of the person who ascended; they had likewise discovered, that the keeping them fast with the ropes was no advantage; but, on the contrary, this was attended with inconvenience and hazard. On the 21st of November, 1783, therefore, M. Pilatre determined to undertake an aerial voyage in which the machine should be fully set at liberty. Everything being got in readiness, the balloon was filled in a few minutes; and M. Pilatre placed himself in the gallery, counterpoised by the Marquis d'Arlandes, who occupied the other side. It was intended to make some preliminary experiments on the ascending power of the machine; but the violence of the wind prevented this from being done, and even damaged the balloon essentially; so that it would have been entirely destroyed had not timely assistance been given. The extraordinary exertions of the workmen, however, repaired it again in two hours, and the adventurers set out. They met with no inconvenience during their voyage, which lasted about twenty-five minutes; during which time they had passed over the space of above five miles. This voyage may be said to conclude the history of those machines which are elevated by means of fire.

BALLOONS FILLED WITH INFLAMMABLE AIR.—This air, or gas, was invented in a very short time after the discovery of M. Montgolfier. The first experiment was made by two brothers Messrs. Robert and M. Charles, a professor of experimental philosophy. The bag which contains the gas was composed of lute strings, varnished over with a solution of the elastic gum called *caoutchouc*; that material, which the Roxbury india-rubber company have, by their great improvements in the use and application of it, rendered of so much value and importance to the community. The bag with which the first essay was made, was only about thirteen English feet in diameter. It remained in the atmosphere only three quarters of an hour, during which it had traversed fifteen miles.

The success of this experiment, and the aerial voyage made by Messrs. Rozier and Arlandes, as above mentioned, naturally suggested the idea of undertaking something of the same kind with a balloon, filled with

inflammable air. The machine used on this occasion was formed of gores of silk, covered over with a varnish of *caoutchouc*, of a spherical figure, and measuring twenty-seven and a half feet in diameter. A net was passed over the upper hemisphere, and was fastened to a hoop which passed round the middle of the balloon. To this a sort of car, or rather boat, was suspended by ropes, in such a manner as to hang a few feet below the lower part of the balloon; and, in order to prevent the bursting of the machine, a valve was placed in it, by opening of which, some of the inflammable air might be occasionally let out. A long silken pipe communicated with the balloon, by means of which it was filled. The boat was of bas-



Balloon of Robert and Charles.

ket work, covered with painted linen, and beautifully ornamented; being eight feet long, four broad, and three and a half deep; its weight was one hundred and thirty pounds. At this time, as at the former, they met with great difficulties in filling the machine with inflammable air, owing to their ignorance of the most proper apparatus. But at last, all obstacles being removed, the two adventurers took their seats at fifteen minutes before two in the afternoon of the 1st of December, 1793. Persons skilled in the mathematics were conveniently stationed with proper instruments to calculate the height, velocity, &c., of the balloon. They continued in the air for the space of an hour and three quarters, when they alighted at the distance of twenty-seven miles from Paris; having suffered no inconvenience during their voyage, nor experienced any contrary currents of air, as had been felt by Messrs. Pilatre and Arlandes. As the balloon still retained a quantity of gas, M. Charles determined to take another voyage by himself. M. Robert accordingly got out of the boat, which was thus lightened by one hundred and thirty pounds, and of consequence the aerostatic machine now had nearly as much power of ascent. Thus he was carried up with such velocity, that in twenty minutes he was almost nine thousand feet high, and entirely out of sight of terrestrial objects. At the moment of his parting with the ground, the globe had been rather flaccid; but it soon began to swell, and the inflammable air escaped from it in great quantity through the silken tube. He also frequently drew the valve, that it might be the more freely emitted, and the balloon effectually prevented from bursting. The inflammable gas being considerably warmer than the external air, diffused itself all round, and was felt like a warm atmosphere; but in ten minutes the thermometer indicated a variation of temperature as great as that between the warmth of spring and the ordinary cold of winter. His fingers were numb by the cold, and he felt a violent pain in his right ear and

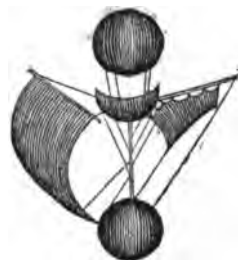
jaw, which he ascribed to the dilatation of the air in the organs, as well as to the external cold. The beauty of the prospect which he then enjoyed, however, made amends for these inconveniences. By the light of the moon he perceived that the machine was turning round with him in the air, and he observed that there were contrary currents which brought him back again. He also observed with surprise, the effects of the wind, and that the streamers of his banners pointed upward; which, he says, could not be the effect either of his ascent or descent, as he was moving horizontally at the time. At last, recollecting his promise of returning to his friends in half an hour, he pulled the valve, and accelerated his descent. When within two hundred feet of the earth, he threw out two or three pounds of ballast, which rendered the balloon again stationary; but, in a little time afterward, he gently alighted in a field about three miles distant from the place whence he set out; though, by making allowances for all turnings and windings of the voyage, he supposed that he had gone through nine miles at least. The success of Messrs. Charles and Robert in their former experiments encouraged them to repeat them with the addition of some machinery to direct their course. The wings were made in the shape of an umbrella without the handle, to the top of which a stick was fastened parallel to the aperture of the umbrella. Five of these were disposed round the boat, which was nearly seventeen feet in length. During their voyage they lost one of their oars, but found, that by means of those which remained, they considerably accelerated their course. Their conclusion, with regard to the effect of their wings, is as follows: "These experiments show, that far from going against the wind, as is said by some persons to be possible in a certain manner, and some aeronauts pretend to have actually done, we only obtained by means of two oars a deviation of twenty-two degrees: it is certain, however, that if we could have used our four oars, we might have deviated about forty degrees from the direction of the wind, and, as our machine would have been capable of carrying seven persons, it would have been easy for five persons to have gone, and to have put in motion eight oars, by means of which a deviation of about eighty degrees would have been obtained. If we did not deviate more than twenty-two degrees, it was because the wind, carried us at the rate of twenty-four miles an hour; and it is natural to judge, that if the wind had been twice as strong as it was, we should not have deviated more than one half of what we actually did; and on the contrary, if the wind, had been only half as strong, our deviation would have been proportionally greater."

Having thus mentioned what was done up to this time with regard to the conducting of aerostatic machines through the atmosphere, we shall now relate the attempts that have been made to lessen their expense, by falling upon some contrivance to ascend without throwing out ballast, and to descend without losing any inflammable air. The first attempt of this kind was made by the Duke de Chartres; who, on the 15th of July, 1784, ascended with the two brothers,

Charles and Robert, from the park of St. Cloud. The balloon contained within it a smaller balloon, which was filled with common atmospheric air, by blowing into which, with a pair of bellows, and thus throwing in a considerable quantity of common air, it was supposed that the machine would become sufficiently heavy to descend. The voyage, however, was attended with such circumstances as rendered it impossible to know what would have been the event of the scheme. The power of ascent with which they set out seems to have been very great; as, in three minutes after parting with the ground, they were lost in the clouds and involved in such a dense vapor that they could see neither sky nor the earth. In this situation they seemed to be attacked by a whirlwind, which, besides turning the balloon three times round, from right to left, shocked and beat it so about, they were rendered incapable of using any of the means proposed for directing their course, and the silk stuff of which the helm had been composed was even torn away. No scene can be conceived more terrible than that in which they were now involved. An immense ocean of shapeless clouds rolled one upon another below them, and seemed to prevent any return to the earth, which still continued invisible, while the agitation of the balloon became greater every moment. In this extremity they cut the cords which held the interior balloon into the boat, and stopped it up. They were then driven upward by a gust of wind from below, which carried them to the top of that stormy vapor in which they had been involved. They now saw the sun without a cloud; but the heat of his rays, with the diminished density of the atmosphere, had such an effect on the inflammable air, that the balloon seemed every moment ready to burst. To prevent this they introduced a stick through the tube, in order to push away the inner balloon from its aperture; but the expansion of the inflammable air pushed it so close, that all attempts of this kind proved ineffectual. It was now, however, absolutely necessary to give vent to a very considerable quantity of the inflammable air; for which purpose the Duke de Chartres bored two holes in the balloon, which tore it open for the length of seven or eight feet. On this they descended with great rapidity; and would have fallen into a lake, had they not hastily thrown out sixty pounds of ballast, which enabled them just to reach the water's edge.

Another method was thought of for raising or lowering aerostatic machines; this was to put a small aerostatic machine with rarefied air under an inflammable air balloon, but at such a distance that the inflammable air of the latter might be perfectly out of the reach of the fire used for inflating the former; and thus, by increasing or diminishing the fire in the small machine, the absolute weight of the whole would be considerably diminished or augmented.

This scheme was unhappily put in execution by the celebrated M. Pilatre de Rozier, and another gentleman, named M. Romaine. Their inflammable air balloon was about thirty-seven feet in diameter,



Balloons and Sails of Rozier.

and the power of the rarefied air one was equivalent to about sixty pounds. They ascended without any appearance of danger or sinister accident; but had not been long in the atmosphere when the inflammable air balloon was seen to swell very considerably, at the same time that the aeronauts were observed, by means of telescopes, very anxious to get down, and busied in pulling the valve and opening the appendages to the balloon in order to facilitate the escape of as much inflammable air as possible. A short time after this the whole machine was on fire, when they had then attained the height of about three quarters of a mile from the ground. No explosion was heard; and the silk which composed the air balloon continued expanded, and seemed to resist the atmosphere, for about a minute; after which it collapsed, and the remains of the apparatus descended along with the two unfortunate travellers so rapidly, that both of them were killed. M. Pilatre seemed to have been dead before he came to the ground; but M. Romaine was alive when some persons came up to the place where he lay, though he expired immediately after



Balloon and Rudder of Blanchard.

M. Blanchard acquired great celebrity as an aeronaut. For a long time he had sought to discover a means of directing balloons. His first ascension took place at Paris in 1784. Through the fears and imprudence of his companion they soon descended with a severe shock. He rose again and alone to an immense height, and after being driven through various currents of air, for nearly two hours, he descended in safety.



Balloon of Blanchard and Jeffries.

But of all the voyages which had been hitherto projected or put in execution, the most daring was that of M. Blanchard and Dr. Jeffries, across the straits of Dover which separate England from France. This took place on the seventh of January 1785, being a clear frosty morning, with a wind scarcely perceptible, at north-northwest. At one o'clock M. Blanchard desired the boat to be pushed off, which now stood only two feet distant from that precipice so finely described by Shakspeare in his tragedy of King Lear. They had now a most beautiful prospect of the south coast of England, and were able to count thirty-seven villages upon it. After passing over several vessels, they found that the balloon at fifty minutes after one, was descending, on which they threw out a sack and a half of ballast: but, as they saw that it still descended and that with much greater velocity than before, they now threw out all their ballast. This still proving ineffectual, they next threw out a parcel of books they carried along with them, which made the balloon ascend when they were about midway between France and England. At a quarter past two, finding themselves again descending, they threw away the remainder of their books, and ten minutes after they had a most enchanting prospect of the French coast. Still, however, the machine descended, and, as they had now no more ballast, they were fain to throw away their provisions for eating, the wings of the boat, and every other moveable they could easily spare. "We threw away," says Dr. Jeffries, "our only bottle, which in its descent, cast out a stream like smoke, with a rushing noise; and when it struck the water, we heard and felt the shock very perceptibly on our car and balloon." All this proving insufficient to stop the descent they next threw out their anchors and cords, and, at last, stripped off their clothes, fastening themselves to certain slings, and intended to cut away their boat, as their last resource. They had the satisfaction, however, to find that they were rising, and as they passed over the high lands, between Cape Blank and Calais, the machine rose very fast, and carried them to a greater height than they had been at any former part of their voyage. They descended safely among some trees in the forest of Guennes, where there was just sufficient opening to admit them.



Balloon of Lunardi.

On the 8th of September, 1785, at forty minutes past one, P. M., Mr. Baldwin ascended from Chester in M. Lunardi's balloon. He first alighted, at twenty-eight minutes after three, about twelve miles from Chester, in the neighborhood of Frodsham, then re-ascending and pursuing his excursion he finally

landed at Rixon Moss, five miles north-northeast of Wavington, and twenty-five miles from Chester. Mr. Baldwin has published his observations and remarks made during his voyage, and the following are some of the most important and curious: "The sensation of ascending is compared to that of a strong pressure from the bottom of the car upward against the soles of his feet. At the distance of what appeared to him seven miles from the earth, though by the barometer scarcely a mile and a half, he had a grand and most enchanting view of the city of Chester, and its adjacent places below. The river Dee appeared of a red color; the city very diminutive; and the town entirely blue. The whole appeared a perfect plain, the highest building having no apparent height, but reduced all to the same level, and the whole terrestrial prospect appeared like a colored map."

Mr. Sadler, of Oxford, was the first Englishman who ascended with a balloon. He constructed one himself, with which he rose from Oxford, on the 4th of October; and a second time on the 12th, and sailed fifteen miles in eighteen minutes.

M. Blanchard and Mr. Sheldon, ascended from Chelsea, on the 16th of the same month; and Mr. Sheldon having alighted about fourteen miles from that place, M. Blanchard pursued his journey alone, and landed near Rumsey, in Hampshire.

Mr. Harper on the 4th of January, 1785, ascended from Birmingham, and sailed to the distance of fifty-seven miles in one hour and twenty minutes.

Mr. Crosbie, ascended from Dublin, on the 19th of same month, with such rapidity, that he was out of sight in three minutes, and descended at the verge of the sea.

Count Zambecari and Admiral Sir Edward Vernon, on the 23d of March, sailed from London to Horsham, a distance of thirty-three miles, in less than an hour.

Mr. Sadler and Mr. W. Windham, on the 5th of May, ascended from Moulsey Hurst, and descended at the conflux of the Thames and Medway.

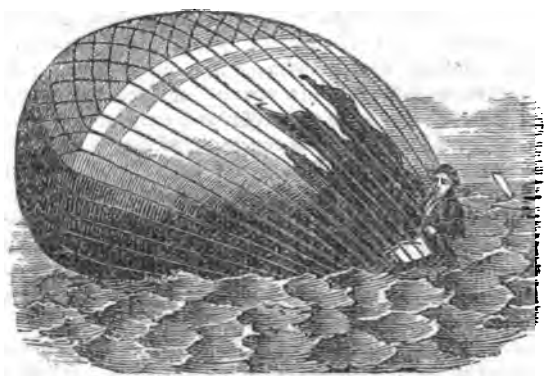
Mr. M'Guire, on the 12th of May, having ascended from Dublin, was carried with great velocity toward the sea, into which he descended, and was taken up by a boat, when on the point of expiring with fatigue.

Mr. Crosbie, on the 19th of July, again ascended from Dublin, intending to cross the channel, and land in England; but he fell into the sea, and was with great difficulty saved from being drowned.

Major Money, on the 22d of July, also ascended at Norwich, and experienced a similar mischance. He was driven out to sea, and fortunately snatched from death by a revenue-cutter.

M. Blanchard, in August, made an aerial voyage from Lisle, to the distance of three hundred miles, before he descended. He had a parachute attached to his car; with this he dropped a dog, which descended gently and without injury.

Mr. Lunardi, on the 5th of October, 1785, made the first aerial voyage in Scotland. He ascended from Edinburgh, and landed at Cupar, in Fife, having trav-



Perilous situation of Major Money.

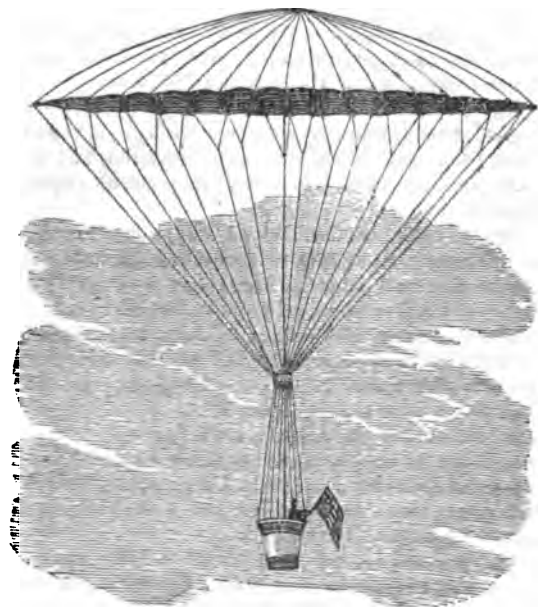
ersed a distance of fifty miles over sea and land in an hour and a half.

M. Blanchard, on the 19th of November, ascended from Ghent, to a great height, and landed at Delft, having cut away his car, to lighten the balloon, which was descending too rapidly, and held fast by the cords, which then served as a parachute.

Mr. Lunardi, on the 25th of November, again ascended at Glasgow, and travelled a distance of one hundred and twenty-five miles. He says, that, being overcome with drowsiness during his voyage, he lay down in his car, and slept for about twenty minutes.

M. Blanchard, in August, 1788, made his thirty-second voyage from Brunswick.

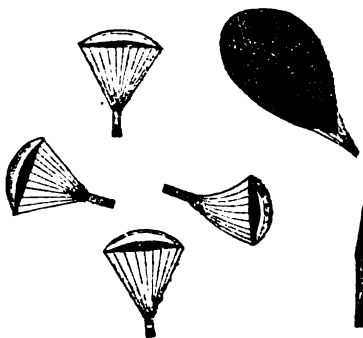
The parachute, represented below, was a sort of umbrella, suspended below the balloon, by means of which, the aerostat may come down very gently and in perfect safety, should any accident happen to the balloon so that he should be forced to quit it. The parachute is one of the material adjuncts to the air



Parachute.

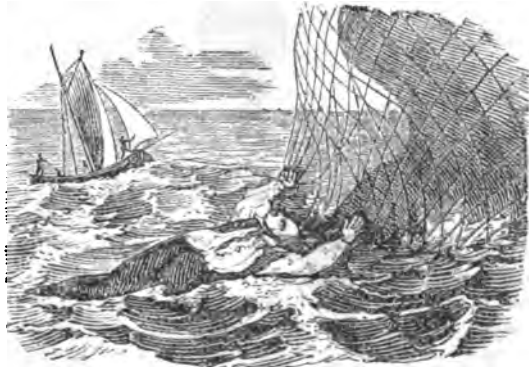
balloon, and for this we are indebted to M. Garnerin. At five o'clock, on the 28th of June, 1802, that gentlemen ascended from Ranelagh gardens, accompanied by Captain Sowden. The weather was very boisterous. In three quarters of an hour they landed, and found themselves four miles beyond Colchester, which was at the rate of seventy miles per hour. On the 3d of July he again ascended from Lord's Cricket-Ground, accompanied by Mr. Locker, and descended at Chingford in Essex, passing a distance of nine miles in one quarter of an hour.

On Sept 21st, 1802, M. Garnerin ascended alone from St. George's parade, North Audley street, Grosvenor-square, for the purpose of descending in his parachute. He went to the height of eight thousand feet before he cut away the parachute, to which he was suspended. His descent for the first thirty seconds was astonishingly rapid. The parachute then expanded, and came down steadily, but it soon began to swing; and this motion increased to such a degree that all were alarmed for the safety of the aeronaut. When he came near to the earth the swinging motion decreased, and he alighted without injury. The velocity with which he came to the ground, was the same as if he had leaped from a height of four feet.



Various positions of the parachute in descending.

But among the most perilous ascents are those of Mr. Sadler from Bristol, in 1810, and Dublin, in 1812. On each time the balloon fell into the sea. On the last occasion, the winds drove it for some time along the surface of the waves, with great velocity, while flocks of sea-birds flew around and



Descent of Mr. Sadler into the Irish Sea.

devoured the scattered provisions. The car sunk, and the aeronaut supported himself by the net-work. While dragged through the water in this terrible situation a vessel approached; and there being no alternative, the balloon was pierced by the bowsprit, and the sinking voyager taken on board.

In 1819, Madame Blanchard, the widow of the celebrated aeronaut of that name, made an ascent at Paris in the night-time. Her car was brilliantly ornamented, and she took her departure amid fire works and showers of rockets. One of the latter was misdirected. It penetrated her balloon, and inflamed the hydrogen. The flames burst forth from every side; and the unfortunate lady fell from an immense height, in the presence of thousands of spectators, who were pierced with pain and grief at her cries and helpless situation. Her lifeless body was found soon after, in one of the public highways of the metropolis.



Death of Madame Blanchard.

AEROSTATION IN THE UNITED STATES.—The first aerial voyage in America, took place January 9th, 1793. At that time, Mr. Blanchard ascended from Philadelphia in the presence of General Washington, and a multitude of people. Since then there have been numerous flights of the kind in different parts of the country. Descriptions of most of them have recently been published in the papers and periodicals of the day; and therefore it is unnecessary for us to repeat them in our Magazine.

USES TO WHICH BALLOONS MAY POSSIBLY BE APPLIED.—Small balloons made of paper, and raised by means of spirits of wine, may serve to explore the



Apparatus for making Gas.

direction of the winds in the upper regions of the atmosphere: they may serve for signals in various circumstances, in which no other means can be used; and letters or other small things may be easily conveyed by them, as for instance from ships that can not safely land on account of storms, from besieged places, islands, or the like.

The larger aerostatic machines may answer all the above-mentioned purposes in a better manner; and they may, besides, be used as a help to a person in ascending a mountain, a precipice, or to cross a river; and perhaps one of these machines, attached to a boat by a rope, in some cases, may be a better sort of sail than any that has yet been used. The machines which can take up one or more persons, may evidently be made subservient to various philosophical and beneficial purposes. Their conveying people from place to place with great swiftness, and without trouble, may be of essential use, even if the art of guiding them in a direction different from that of the wind should never be accomplished. By means of those machines the shape of certain seas and lands may be better ascertained; men may ascend to the top of mountains they never visited before; they may be carried over marshy and dangerous grounds; they may by that means come out of a besieged place, or an island; and they may, in hot climates ascend to a cold region of the atmosphere, either to refresh themselves, or to observe frost and ice, which are never seen below; and, in short, they may be thus taken to several places, to which human art hitherto knew of no conveyance. These machines may subserve numerous philosophical purposes; and it may be sufficient to say, that hardly anything that passes in the atmosphere is known with proper precision, which is principally for want of a method of ascending into it. The formation of rain, of thunder-storms, of vapors, hail, snow, and meteors in general, require to be attentively examined and further ascertained. The action of the barometer, the refraction and temperature of the air in various regions, the descent of bodies, the propagation of sound, &c., are subjects which all require a series of observations and experiments, the performance of which could never have been properly expected before the discovery of aerostatic machines.

THE largest pyramid is 481 feet high, and 693 feet on the sides; its base covers 11 acres. The stones are about 30 feet in length, and there are 208 layers; 360,000 men were employed in its erection.

THE LANGUAGE OF SIGNS.

IN the summer of 1818, a Chinese young man passed through Hartford, Connecticut. He was so ignorant of the English language, that he could not express in it his most common wants. The principal of the deaf and dumb asylum in that place, invited the stranger to spend an evening within its walls, and introduced him to Mr. Laurent Clerc, the celebrated deaf and dumb pupil of the Abbe Sicard, and at that time an assistant teacher in the asylum. The object of this introduction was, to ascertain to what extent Mr. Clerc, who was entirely ignorant of the Chinese language, could conduct an intelligent conversation with the forefinger, by signs and gestures merely. The result of the experiment surprised all who were present. Mr. Clerc learned from the Chinese many interesting facts respecting the place of his nativity, his parents and their family, his former pursuits in his own country, his residence in the United States, and his notions concerning God and a future state. By the aid of appropriate signs, also, Mr. Clerc ascertained the meaning of about twenty Chinese words. When the conversation began, the stranger appeared bewildered with amazement at the novel kind of language which was addressed to him. Soon, however, he became deeply interested in the very expressive and significant manner which Mr. Clerc used to make himself understood; and, before one hour had expired a very quick and lively interchange of thought took place between these so lately entire strangers to each other. The Chinese himself began to catch the the spirit of his new deaf and dumb acquaintance, and to employ the language of the countenance and gestures with considerable effect to make himself understood.

About a year afterward, the principal of the asylum visited Cornwall, Connecticut, where upward of twenty heathen youths were at that time receiving education under the patronage of the American Board of Commissioners for Foreign Missions. With the consent of the principal of that institution, he gathered round him one evening several of these interesting strangers, from the islands of the South sea, and from different tribes of the North American Indians. The object of the interview was, to ascertain how far a conversation could be conducted with them, merely by signs and gestures. The result was similar to that in the case of Mr. Clerc's intercourse with the Chinese. Questions were proposed to them on a variety of topics relating to their own individual history and that of their respective countries, and to their early religious knowledge.

For example, Thomas Hoppoo, a native of Owhee, was asked if his parents were living; how many brothers and sisters he had; when he left his native shores; whether his countrymen worshipped idols and sacrificed human victims; how the women were treated by the men; what was the climate of his country; what its productions; with many inquiries of a similar nature, all of which he comprehended, and to many of which he replied by signs. The meaning, too, of a number of Owthean words was ascertained by signs merely, and found to correspond with the import which had been for some time pre-

paring in the school; and, indeed, in a variety of instances, the most correct meaning of such words was established, by the medium of signs, in a more satisfactory way than had been previously attempted. Throughout this conversation, the heathen youths appeared to take a deep interest, and to have a peculiar aptitude in comprehending the signs which were proposed to them, and in inventing such as were necessary for a reply.

On the testimony of several of the South Sea islanders, it appeared that not a few of the signs employed in the instruction of the deaf and dumb, are precisely the same which their countrymen use to supply the deficiency of, or to give emphasis to their own comparatively barren language;—a fact which had indeed been anticipated, from the singular circumstance often observed by the teachers of the deaf and dumb among their pupils, that mutes who meet for the first time are able to understand each other fully on many common topics; the Author of nature having laid the foundation in the very constitution of our species, and in the structure and processes of the visible creation, for a universal expression of the same ideas, on a vast variety of subjects by similar signs.

Not long after this interview, Thomas Hoppoo visited the asylum for the deaf and dumb in Hartford. He was requested to attempt by the natural language of signs, such as his own feelings and conceptions at the time dictated, to give to a circle of pupils around him a sketch of his history. In doing this he occupied a half an hour or more, and secured the fixed attention and interest of the pupils. It was surprising to see the ingenuity and readiness with which he employed this language of signs and gestures, and, not less so, to ascertain, afterward, that a very considerable part of what he said, certainly more than half of it, was fully understood by those to whom it was addressed.

AGE OF ANIMALS.—A bear rarely exceeds twenty years; a dog lives twenty years; a wolf twenty; a fox fourteen or sixteen; lions are long-lived—Pompey lived to the age of seventy years; a squirrel or hare seven or eight years; rabbits seven. Elephants have been known to live to the great age of 400 years. When Alexander the Great had conquered one Phorus, king of India, he took a great elephant which had fought valiantly for the king, and named him Ajax, dedicated him to the Sun, and let him go with this inscription, "Alexander, the son of Jupiter, hath dedicated Ajax to the Sun."—This elephant was found with this inscription 350 years afterward. Pigs have been known to live to the age of thirty years; the rhinoceros to twenty. A horse has been known to live to the age of sixty-two, but averages twenty to thirty. Camels sometimes live to the age of one hundred. Stags are long-lived. Sheep seldom exceed the age of ten. Cows live about fifteen years. Cuvier considers it probable that whales sometimes live one thousand years. Mr. Mallerton has the skeleton of a swan that attained the age of two hundred years. Pelicans are long-lived. A tortoise has been known to live to the age of one hundred and seven.



THOMSON and his Localities.—At top, the Poet, from a Portrait by J. Paton. On the left, a view of Kelso Abbey Church, from a Painting by Nasmyth. On the right, Jedburgh Abbey, from a Painting by Arnald. At bottom, the Thames from Richmond Hill, from a Drawing by Tomblason.

LOCAL MEMORIES OF GREAT MEN.

THOMSON.

IF to be popular, in the best meaning of the word, that is, to be universally read and understood long after all temporary tastes or influences have ceased to act, be the best test of a poet's genius, then must we place the author of the "Seasons" high indeed in the intellectual scale. His works are everywhere, and in all hands. Some portion of this popularity may per-

haps be attributed to the circumstance that he is never too deep for his readers; without being by any means a superficial writer, his excellences lie so much on the surface, that there is as little danger of their being overlooked as unappreciated. And these excellences may be chiefly described as resulting from an exquisite apprehension of the characteristics of external nature. "There is no writer who has drunk in more of the inmost soul of his subject. If it be the object of descriptive poetry to present us with pictures and visions, the effect of which shall vie with that of the

originals from which they are drawn, then Thomson is the greatest of all descriptive poets; for there is no other who surrounds us with so much of the truth of nature, or makes us feel so intimately the actual presence and companionship of all her hues and fragrances. His spring blossoms and gives forth its beauty like a daisied meadow; and his summer landscapes have all the sultry warmth and green luxuriance of June; and his harvest fields and his orchards 'hang the heavy head' as if their foliage were indeed embrowning in the sun; and we see and hear the driving of his winter snows as if the air around us were in confusion with their uproar."

The scenes in which Thomson was born, lived, and died, were all in fine harmony with his works, possessing the same variety of beauty and grandeur, and for the most part calculated by their traditional and historical memories to nourish a poet's mind. From the beautiful pastoral country, with its undulating surface and romantic rivers and woodlands, Roxburgh, in which he was born (September 11, 1700), and where he spent his boyhood, he removed to Edinburgh, where the leisure hours that could be spared from the University were spent in wandering about the magnificent neighborhood of the great northern capital. Thomson had been about two years at this place when his father, a clergyman, died, and his mother, with the rest of the numerous family, came to join James, in order the better to eke out their scanty income while he remained at his studies. At Edinburgh the first rude conception of the "Seasons" appeared in a poem entitled "On a Country Life, by a Student of the University;" but if the poet had placed much reliance on this essay, he must have been sadly disappointed. The next effort was somewhat more successful. Mr. Hamilton, the divinity professor of the University, having given Thomson the 119th Psalm as an exercise, he made, though in prose, so poetical a paraphrase of it, that the professor and the audience were alike surprised and charmed. The former, however, thought it necessary to warn him that if his views were bound up with the ministry, less imagination and a plainer style would be advisable. A little circumstance, however, enabled the poet to adopt the wiser course of doing his best to develop the powers God had bestowed upon him. Some gentlemen saw or heard read the paraphrase in question, and made an observation, which soon reached Thomson's delighted ears, that if the poet came to London, his merit would doubtless be rewarded. But a short time elapsed before Thomson and his mother parted to meet no more. She died not long after he reached London, and in the verses to her memory he describes what he felt, as he embarked at Leith for the metropolis, with which a young author's dreams of ambition were almost always more or less connected. He says—

"When on the margin of the briny flood,
Child'd with a sad presaging damp I stood,
Took the last look, ne'er to behold her more,
And mixed our murmurs with the wavy war,
Heard the last words fall from her pious tongue,
Then, wild into the bulging vessel flung,
Which soon, too soon, conveyed me from her sight,
Dearer than life, and liberty, and light!"

The young poet's first entrance to London promised, as it has done to so many of his brethren, more than for a long time was realized. He had brought with him some letters of introduction, tied up in a handkerchief, which were stolen from him, a circumstance that altogether presents a somewhat amusing idea of the simplicity of Thomson's character. From all that we subsequently perceive of his unworldly character, it is evident that not Goldsmith's immortal Moses himself presented a much fairer mark for the wiles of the crafty and dishonest than the young student, Scotchman though he was. His sensitiveness probably prevented him from sending for new letters; and from this and other circumstances he seems to have had some, perhaps a great deal, of pecuniary anxiety. Johnson says, "his first want was a pair of shoes."

A noticeable point in Thomson's history is the number and zeal of his friends; it may also be taken as an additional trait of his character. He was evidently from a child loved and respected by all who knew him. One friend had superintended his education at Jedburgh; another now took him by the hand, introduced him to influential circles, and in various ways assisted the young poet, while preparing for his first important publication. This was Mr. Forbes, afterward lord president of the session, commemorated by Thomson in the verses,

"Thee, Forbes, too, whom every worth attends,
As truth sincere, as weeping friendship kind," &c

His first London residence was in Lancaster Court, in the Strand, but, says Faulkner, in a room in the Dove coffee-house, situated facing the water side, between the Upper and Lower Mall at Hammersmith, Thomson wrote his "Winter." He was in the habit of frequenting this house during the winter season, when the Thames was frozen and the surrounding country covered with snow. This fact is well authenticated, and many persons visit the house to the present day. "Winter" was the first written of the four poems which compose the "Seasons." As to the origin of this work, Warton observes, "My friend, Mr. William Collins, author of the 'Persian Eclogues and Odes,' assured me that Thomson informed him that he took the first hint and idea of writing his 'Seasons' from the title of Pope's 'Four Pastorals.'" "Winter" was published in 1726, but, strange to say, remained unnoticed till the zeal of an intelligent critic, Mr. Whateley, author of "Observations on Modern Gardening," drew attention to it; the poem did the rest for itself. It soon rose into reputation, and brought the poet many new friends and patrons, if it brought him little money. He received for "Winter" the sum of just *three guineas*. "Summer" followed in the next year, "Spring" in 1728, and "Autumn" in 1730. "Spring" was dedicated to the Countess of Hertford, to whose intercession Savage was indebted for his life. Thomson once spent some months at the country-seat of this lady, but, according to Johnson, he seemed to enjoy carousing with her lord so much better than talking with her, that he was never again invited. We must not quit the "Seasons" without remarking that Thomson adds another instance to

the illustrious list of authors, from Shakspeare downward, who have shown the value of continual efforts at improvement. To the original edition of the "Seasons" no less than nine hundred and sixty new lines have been added. Thomson's ambition now aimed at the drama. In 1729 the tragedy of "Sophonisba" appeared, with moderate success. By the critic it was looked on rather as a moral lecture, in a dramatic form, than a genuine play, and the less refined part of the audience having unfortunately caught up a somewhat ludicrous one,—

"O Sophonisba, Sophonisba, O!"—

there was often irrepressible laughter where the poet had looked for tears. A parody of the original,—

"O Jemmy Thomson, Jemmy Thomson, O!"—

ran through the town to the poet's deep mortification. Subsequent literary efforts may be briefly dismissed. He wrote two or three other plays, with more or less of success, but none of them add to the reputation of the author of the "Seasons." The most popular of them was "Tancred and Sigismunda," but even that is now never acted, and probably not often read. The "Castle of Indolence," on the contrary, the last piece published in the author's lifetime, is only less popular than the "Seasons," while it no doubt possesses for many readers even a superior charm. This poem originally consisted of a few stanzas, composed in ridicule of his own want of energy, and of that of some of his friends. In it we have a pleasant personal glimpse of the poet, written, with the exception of the first line, by Lord Lyttleton, the attached friend of Thomson:—

"A bard here dwelt, more fat than hard beseems,
Who, avoid of envy, guile, and lust of gain,
On virtue still, and nature's pleasing themes,
Poured forth his unpremeditated strain:
The world forsaking, with a calm disdain,
Here laughed he careless in his easy seat;
Here quaffed, encircled with the joyous train,
Of moralizing sage; his ditty sweet
He loathed much to write, he cared to repeat."

With what propriety Thomson introduced himself into the "Castle of Indolence," we may judge from various anecdotes. He was not accustomed to rise until noon, and when once asked by an acquaintance who found him a-bed even later than usual, why he did not rise, he answered, that he had nothing to rise for. Another character introduced into the poem, was evidently placed there as a memento of the poet's fitting and honorable gratitude, rather than from any peculiar fitness in the man for the scene. We refer to Quin the actor, of whom a touching incident is related in connexion with Thomson. By the loss of the secretaryship of briefs, on the death of the lord chancellor Talbot, who had given it to him (and to whose son Thomson had been tutor for some time, and with him had travelled abroad), the poet was somewhat straitened in his circumstances. Soon after the actor, learning that the author of the "Seasons" was confined for a debt of about seventy pounds, went to find him, and introduced himself. Thomson was much disconcerted at the visit, and his uneasiness was not relieved when the visiter said further he had

come to sup with him. It was added, however, that as he (Quin) had supposed it would have been inconvenient to have a supper dressed in that place, he had taken the liberty of ordering one from an adjoining tavern. Some bottles of claret were introduced as a preliminary. Supper over, Quin said: "It is time now, Jemmy Thomson, we should balance accounts." The poet began to fear all this was to end in some additional demand upon him, when Quin, perceiving his impression, said: "Sir, the pleasure I have had in perusing your works, I can not estimate at less than a hundred pounds, and I insist upon taking this opportunity of acquitting myself of the debt." So saying, he placed a banknote on the table, and hurried off.

In 1746, however, Thomson's affairs were again placed on a satisfactory basis, by Lord Lyttleton's obtaining for him the post of surveyor-generalship of the Leeward Islands, worth 300*l.* a year. His residence at this period was amidst the beautiful scenery of Richmond; and here he used to receive the visits of Pope, Lord Lyttleton, Mallet, and a long list of other eminent friends and acquaintances. His tastes and habits in the last year of his too short life are thus referred to by himself in a letter written not long before his death: "Retirement and nature are more and more my passion every day; and now, even now, the charming time comes on. Heaven is just on the point, or rather in the very act of giving earth a green gown. The voice of the nightingale is heard in our lane. You must know that I have enlarged my rural domain much to the same dimensions you have done yours. There are two fields next to me; from the first of which I have walled round and paled in about as much as my garden consisted of before, so that the walk runs round the hedge, where you may figure me walking any time of the day, and sometimes in the night."

It was Thomson's custom to walk from his residence in Kew Lane to London, when the weather rendered a water conveyance ineligible. On one of these occasions, on reaching Hammersmith, tired and overheated, he imprudently took a boat for Kew. A severe chill seized him, which his subsequent walk did not remove; the next day he was in a state of high fever. He got better; but one fine evening he was tempted to expose himself to the dew, before quite recovered, and the effect was fatal. He was buried in Richmond Church, where Lord Buchan subsequently placed a brass tablet, with an inscription, and some lines from "Winter." A monument to his memory was erected in Westminster Abbey in 1762. His house at Richmond fell into the hands of Mrs. Boscawen, a lady who exhibited her appreciation of the great memory of the place, by the strictest preservation of whatever had become associated with the poet's name. She replaced the little seat, on which he had so much loved to sit, in its original place, in the retired part of the garden, and hung votive tablets around it to his honor. There, too, she set up his bust, with the simple but eloquent words,—

"Here Thomson sung
The Seasons and their change."

In an alcove she placed the little old-fashioned table on which Thomson had been wont to write. Here also was set up an inscription, somewhat florid certainly, but exhibiting a correct appreciation both of the poet and the man: "Within this pleasing retirement, allured by the music of the nightingale, which warbled in soft unison to the melody of his soul, in unaffected cheerfulness, and genial, though simple elegance, lived JAMES THOMSON. Sensibly alive to all the beauties of nature, he painted their images as they rose in review, and poured the whole profusion of them into his inimitable "Seasons." Warmed with intense devotion to the Sovereign of the Universe, its flame glowed through all his compositions. Animated with unbounded benevolence, with the tenderest social sympathy, he never gave one moment's pain to any of his fellow-creatures,—save only by his death, which happened at this place on the 27th day of May, 1748."

THEORY OF WINDS

"THE hollow winds begin to blow,
The clouds look black, the glass is low."—DARWIN.

THE "great globe which we inhabit," is wrapped in "circumambient air;" on every side she is covered to the depth of sixty miles with a breathing atmosphere, in which kings and beggars are equally immersed, and on which they mutually depend for life. This vast aerial ocean keeps faithful company with the earth, in her annual revolution round the sun; and as she, year after year, "upon her axis spinning sleeps," it also keeps still closer company, and by the laws of gravity, partakes of her motion, and *with* her, performs her daily revolution. The earth does not revolve *in* the atmosphere, but *with* it; had it been otherwise, the friction between the air and the earth, would have ground the living world to atoms. The air is highly elastic; it is exceedingly susceptible of motion; and from the creative morning till the present hour, it has been in some part or other of its wide domain in a state of restless commotion. These motions are known under the name of *winds*, a name that speaks of many vicissitudes, and brings to mind the sweetness of the summer *zephyr*, the wildly-rushing desolation of the Indian *turnado*, the hot and pestilential *simoom*, the fresh *breeze* of northern oceans, or the last convulsive *breath* of a dying friend.

Heat is the *principal* cause of winds. It must be evident, that as the rays of the sun descend *perpendicularly* on the earth under the torrid zone, that in those regions a much greater quantity of heat must be communicated, than in the more *oblique* countries toward the poles. The heat thus acquired rarefies the air, and causing it to ascend, the vacuum which follows is immediately filled from the north and south, which, being of a cold nature, the fierce heats of the equatorial regions are so modified as to become bearable. Thus, two winds, north and south, would be generated; but these would be afterward modified and changed. For example: the diurnal motion of the earth gradually lessens to the poles from the

equator, where the motion is at the rate of fifteen geographical miles in a minute; and as that motion is communicated to the atmosphere in an equal degree, it is evident, that if part of it was conveyed suddenly from a temperate latitude, it would not directly acquire the velocity of that at the equator, consequently the earth would outstrip it in speed, and as she moves from west to east, the mountainous ridges would strike against it, and driving it forward, an *east* wind would be the result. Land and sea breezes, tradewinds, regular and variable winds, are all accountable for on the above principle, modified, however, by various other influences, such as the motions of the sea under the guidance of the moon, chymical changes in the elementary constituents of the atmosphere, &c.

In one of Dr. Lind's experiments he found that the velocity of the wind was ninety-three miles an hour, a swiftness of motion which, since M. Garnerin's aerial voyage to Colchester, must be considered within the limits of probability.

Winds, or currents of air, are produced by the rarefaction or condensation of the atmosphere by heat, cold, lightning, &c.

The winds may be divided into three sorts: 1, tradewinds; 2, monsoons; 3, variable winds.

1. TRADEWINDS are so named from their convenience in trade. In the Atlantic and Pacific oceans, between 30 deg. N. and 30 deg. S., the wind blows constantly from the east, and would uniformly do the same across Africa and America, within their limits, were it not interrupted by the high mountains that lie in the direction of N. and S., particularly the lofty Andes, in America, and the mountains of Atlas, the Moon, and of the Lions, in Africa.

The cause of the tradewinds is the diurnal motion of the earth, which, turning from west to east, the part immediately under the sun being heated, the air is rarefied and rendered lighter; hence, to restore the equilibrium of the elastic fluid, the air rushes in from the north and south and consequently makes a current in a direction contrary to the earth's motion, that is, from east to west; apparently following the tract of the sun, whose course appears to be in the same direction.

The tradewinds near these northern limits, blow between the north and east, and near the southern limits, between the south and east.

2. THE MONSOONS (this word by Mr. Marsden is supposed to be a corruption of the word monsoon, which both in Arabic and Malay signifies a year) are periodical winds, which blow six months one way and six months the contrary way; they prevail chiefly in the Red sea, the Arabian sea, and through the northern parts of the Indian ocean and in the Chinese sea.

The monsoons are neither the same with respect to the points that wind blows on, nor are the times of their changing the same. It is likewise necessary to observe that the changing is not the work of a moment, but that it is sometimes several weeks before a complete change is brought about, during which there is sometimes calms, variable winds, and sometimes violent storms, of the nature of the hurricanes

in the West Indies; these tempests by the sailors are called the breaking up of the monsoons. On the west side of the Arabian sea they set in about September, blowing from the northeast points to the southwest till April; when they change and blow the contrary way the remainder of the year. To the eastward of Sumatra and Malacca, on the north of the equator, and along the coasts of Cambodia and China, quite through the Philippines as far as Japan, the monsoons blow northerly and southerly; the northern setting in about May. These winds are not quite so certain as those in the Arabian sea.

Between Sumatra and Java to the west, and New Guinea to the east, the same northerly and southerly winds are observed; but the first half of the year the monsoons incline to the northwest and the other half of the year to the southeast.—These winds commence a month or six weeks after those in the Chinese sea set in, and are quite as variable.

3. **VARIABLE WINDS** are those that keep no fixed period, such as we experience daily, the wind sometimes changing to all the points of the compass in a few hours. These winds chiefly prevail toward the northern and southern regions of the earth; beyond thirty degrees of north or south latitude. The principal points from which the winds blow in England, are the northeast and southwest: the former (chiefly in January, March, April, and May) during five months of the year, the latter during six months, and the remaining month from every point of the compass.

The following laws have been deduced from extended experiments by Kamtz and Dove:—

1. The barometer falls under the influence of the east, southeast, and south winds; the descent changes to ascent by the southwest wind; rises by the west, northwest, and north winds; the ascent changes to descent by the northeast winds. This law is deduced from observations, made at Paris four times a day, at first for five years, then for ten years, 1816–25.

2. The thermometer rises by the east, southeast, and south winds; the ascent changes to descent by the southwest wind; falls by the west, northwest, and north; the descent changes to ascent by the northeast wind. This and the following are believed to be based upon observations made at Paris and London, and having been confirmed by observations of Kamtz himself during four years.

3. The elasticity of aqueous vapor is increased by the east, southeast, and south winds; its increase changes to decrease by the southwest wind; it decreases by the west, northeast, and north winds, and its decrease changes to increase by the northeast wind.

4. The humidity of the atmosphere decreases, relatively from the west winds passing by the north to the east, and increases, on the contrary, from the east by the south to the west.

THE vine bears three kinds of grapes; the first of pleasure, the second of drunkenness, and the third of repentance.

ELOQUENCE.

THERE is a deep, impressive eloquence in the language of nature. Whether we mark her teachings in her woods and vales, her landscapes replete with beauty and light, ascend to the starry heavens and view the bright gems of night, or in her many lovely works see the impress of Deity, we feel that the spirit of eloquence breathes everywhere. Her language then is love, but there is a voice not less eloquent in the storm, when the cold wind blows, and the tempest rages fearfully, it speaks of Him whose chariot is the whirlwind.

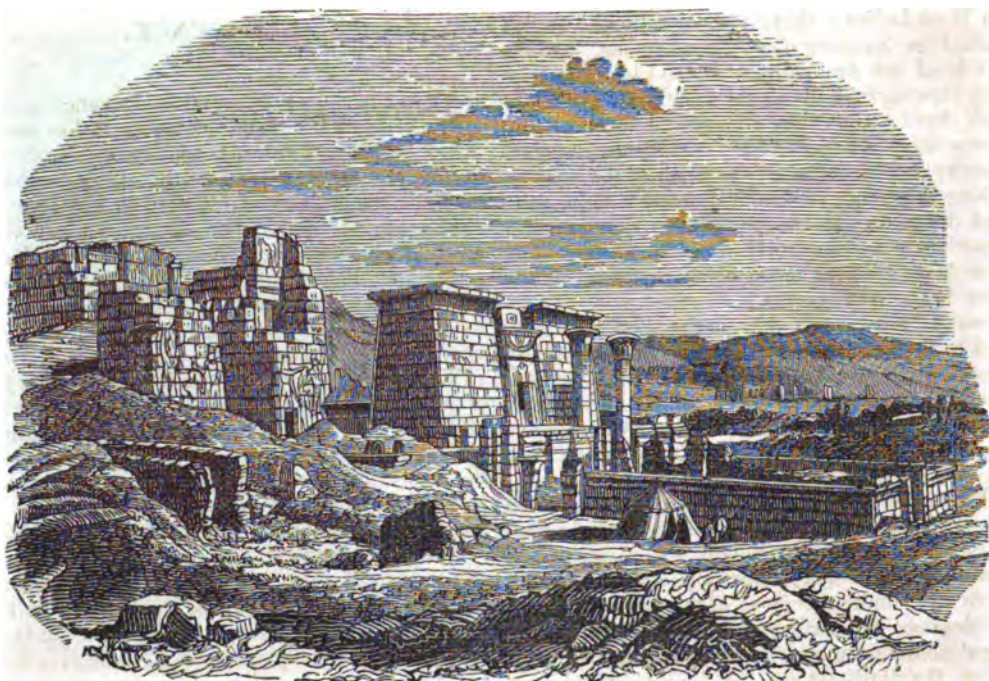
There is an eloquence in a look. It may be one of proud disdain, and then its influence is fearfully chilling. If one of benevolence or affection, its gladdening beams penetrate the inmost recesses of the heart. There is untold eloquence in the last looks of a dying friend, when the sparkling eye would fain describe the rising glories of a happier land.

There is a smile of eloquence, which curls the lip and lights the eye. It is the bright imaginings of the spirit, the gushing forth of the fountain of feeling in a smile, which throws a sunbeam on the face, reflected on the countenances of all around. Who has not known the heartfelt eloquence of a mother's smile.

There is a deep, a pleading eloquence in tears. They are sorrowful messengers of repentance, compassion, or love. There was an unspeakable, a sublime eloquence in the tears which Jesus wept at the grave of Lazarus.

There is a powerful eloquence in language. It calls forth all the latent energy of the soul, and tunes this instrument of a thousand strings to lays of discord or of melody. The orator combining the natural beauties of language, with the graces of expression, can call the most hidden springs of the soul into action. It was by his mighty eloquence that the greatest of Athenian orators acquired such celebrity and for a long time preserved the rights of his country inviolate. It was this that gave to Cicero, the prince of Roman orators, his influence in their councils. This enabled an orator in more modern times to achieve much in the cause of his country.

An assemblage of persons are collected together to take measures to avert oppression. The clouds of doubt, gloom, and despondency, seem alternately to hover over them, when one hitherto almost unknown speaks. While he simply, yet vividly portrays the evils of subjection, he contrasts them with the blessings of liberty. Enthusiastically interested in the subject, he follows the inspiration of his feelings, till all present catch the spirit, and as he utters his closing sentence "liberty or death," every heart in that assembly audibly responds, and all resolve to follow the bright star of their destiny, liberty. Succeeding events have shown the glorious success of this resolution. While America is hailed as the "land of the free," the name of the eloquent Patrick Henry will be encircled with the bright halo of glory and fame, which surrounds those names ever memorable in the annals of our country.



No, or Ancient Thebes.

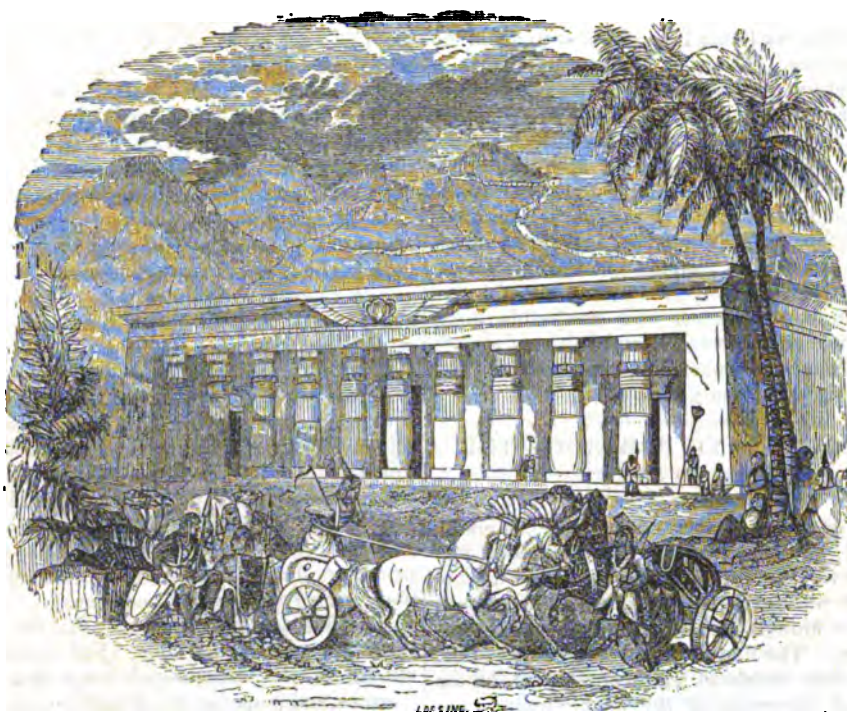
THE EGYPTIAN THEBES.

THE name of No occurs several times in the Holy Scriptures as that of a great and populous Egyptian city : and is sometimes distinguished by the addition of "Ammon" (No-Ammon). This addition would naturally suggest that the city denoted was the chief seat of the worship of Jupiter Ammon ; and this was Thebes. The Septuagint renders it by "Diospolis," which was a name of Thebes, on account of its devotion to the worship of Jupiter. It is true that there were two other cities in Egypt which bore the same name ; but as Thebes was the principal, and other circumstances concur in its favor, we have little hesitation in acquiescing in the general conclusion that this famous city is intended by the No of Scripture.

Thebes has been celebrated as the most ancient capital and renowned city of Egypt, the origin of which is lost in the remote infancy of human settlements and institutions. Long the metropolis of the country, and continuing, as the independent capital of Upper Egypt, to eclipse the metropolitan cities which arose in Middle and Lower Egypt—enriched by commerce, devotion, and the spoils of conquered kings—and always looked to with veneration as the parent city, and the prime seat of the sacred mysteries, and of learning and the arts,—Thebes survived in splendor and magnificence long after Memphis had become the political metropolis of the united kingdom, and, from its more advantageous situation for trade, had diverted from it the wealth it derived from commerce. This, however, doubtless gave the first impulse to its decline ; but from the reports of ancient writers it may well be questioned whether, at any

point of time which the Old Testament *history* embraces, the subtraction which the rivalry of Memphis made from the wealth and population of Thebes enabled her to eclipse, or even equal, the remaining glory of that most renowned city. And even at this day, while Noph, and Zoan, and On, have scarcely left a trace of their existence, the desolate temples of Thebes, which remain fresh, fair, and strong, promise to carry down to future ages the record of her glory and desolation.

Thebes has the distinction of being mentioned by Homer, who speaks of its great wealth, and mentions its hundred gates, from each of which issued two hundred men, with horses and chariots. This passage has occasioned more discussion than a poetical allusion appears to require. Diodorus seems to intimate that this force was not raised in the immediate vicinity of Thebes ; and as to the hundred gates, he states the conjecture of some persons, that the city derived its title of Hecatompylos from the numerous propylæa, or gateways of temples and public buildings. Some understand it to denote so many palaces of princes, each of whom, on pressing occasions, furnished the stated number of men, horses, and chariots. A strong objection to the notion that city-gates can be intended, arises from the fact, as noticed by Pococke, Wilkinson, and others, that not the least indication can be discovered that Thebes was ever enclosed by a wall. We have no detailed descriptions of the city from ancient sources, but only of the conspicuous public monuments ; and it is very possible that, in this and other ancient cities of Egypt, while the temples seem adapted, from their massive character and durable materials, to resist the utmost power of time, the mass of the private dwellings were of a very humble char-



Ancient Egyptian Palace.

acter, probably of mud or brick; some suppose they were of wood, but this would be hardly possible in Egypt, where timber is, and ever has been, scarce and costly. But it is now well apprehended that, in speaking of the splendor of ancient cities, we understand exclusively their public buildings and monuments, and nothing of handsome streets and comfortable abodes, in which our modern cities as far exceed the ancient as the ancient probably exceeded ours in temples, theatres, palaces, and tombs. However, the very complete information obtained from the painted walls and tombs at Thebes, concerning the usages in peace and war, the arts, the costumes, and the manner of life and action of the ancient inhabitants, furnishes a very satisfactory and most authentic corroboration of the ancient accounts of their luxury and wealth. Of the latter, some idea may be formed from the accounts of the spoil obtained by the Persians, under Cambyses, and the quantity of precious metal collected after the burning of the city, which last, according to Diodorus, amounted to upward of 300 talents (about 26,020 pounds troy) of gold; and 2,300 talents (or 199,518 pounds) of silver; the former worth 1,248,960*l.* sterling,* and the latter 598,544*l.*† This great conflagration is said not only to have destroyed the private houses, but the greater part of the numerous temples by which Thebes was adorned. This is however not the first time that Thebes had suffered from the desolations of war. In Nahum (iii. 8, 10) mention is made of a devastation of No, prior to the ruin of Nineveh, and which appears to correspond to the first

direct blow which the splendor of Thebes received on the invasion of Egypt by the Ethiopians, B. C. 759. Between this and the invasion of Cambyses, it probably again suffered in the incursion of Nebuchadnezzar; and after it was burnt by the Persian king we cease to hear of its great importance as a city, though it still survived and was held in high consideration, and something seems to have been done toward its restoration; and B. C. 86. it was still of such strength and consequence as to dare to rebel against Ptolemy Lathyrus, and stood a three years' siege before it was taken and plundered. Perhaps this fact may be set in opposition to the opinions already stated, that Thebes was never walled; for if it was not, it is difficult to understand how it could have held out so long. Under the Romans, some small buildings seem to have been erected for the convenience of their local establishments; but it was again punished for rebellion by Gallus, in the reign of Augustus; and from that time we hear no more of it as a living town. Strabo describes it in his time as ruined, the only inhabitants being collected (as at present) in a few hamlets constructed on its site. The zeal of the early Christians against the forms of outrageous idolatry there displayed, led them to do their best to deface and destroy its remaining monuments. Thus was Thebes at last reduced to a desolation—but perhaps the grandest desolation in the world—by a succession of destructions and spoliations which were foretold by the inspired prophets, whose predictions were, in their day, derided and laughed to scorn. And here we may pause. The temples, obelisks, statues, and tombs of Thebes, offer a wide field for

* Or about \$ 6,244,800 of our currency.

† Or nearly \$3,000,000.

description. But as these could not be satisfactorily examined within our limits it seems best to avoid the subject altogether. There is however one point in which we feel too much interest not to allude to it. Thebes has again in our own day risen to an importance peculiarly its own, and which has drawn toward it the strong attention of all Europe. This arises not only from the peculiar character of its monuments, and the facility of access to them, but from the fact that the paintings and sculptures which decorate the walls of its temples and the interior of its long-hidden tombs, furnish a vast mine of information, of the most authentic and intelligible kind, concerning the manners, usages, and habits of remote times, which might elsewhere be sought in vain, and which had long been vainly desired.

THE GROWTH AND POWER OF THE UNITED STATES.

SINCE the complete establishment of the American constitutional government, the future growth and ultimate power of the United States have been a problem both with philosophers and political economists. There are two strongly-exciting causes to this species of speculation. The first to discover the effect of the freest institutions mankind has ever adopted, on the happiness and prosperity of the people under their influence; and the next to discover the natural growth of the only nation which, since the earliest ages of the world, has been left undisturbed in its natural progress. Half a century has not wholly determined these problems, beyond a contingency: but it has furnished us with some elements of the ultimate result. Those, especially, which relate to physical growth and power, may be regarded as leading to certainties of result, beyond any disturbing causes, except that of Divine Providence. This future prospect is important, in considering our relations with other nations, and in determining our national policy. For this cause we propose to take a birdseye view of the natural capabilities of the United States.

THE SURFACE of the United States comprehends a space of about two millions two hundred and fifty thousand square miles, and is about *one twentieth of the land surface of the Earth*. More than one half this surface lies between the 35th and 45th degrees of latitude. It is, therefore, in the very heart of the temperate zone, where nature brings men and fruits to the highest measure of comparative excellence.

THE CIRCUMFERENCE of border line of the United States is about *nine thousand five hundred miles in length*. It may be divided thus:—

Boundary, in common with British N. America, about,	- - -	3,700 miles.
Boundary in common with Mexico,	- - -	2,300 "
Coast of the Pacific,	- - -	700 "
Coast of the gulf of Mexico,	- - -	1,000 "
Coast of the Atlantic,	- - -	1,800 "
Total,	- - -	9,500 "

The territory thus enclosed includes also *nearly ten thousand miles of lake and river navigation*, of which two thirds is in the valley of the Mississippi. The great lakes make a chain of about two thousand miles; the Mississippi two thousand more; the Missouri two thousand more; the Ohio nearly one thousand; and hundreds of minor streams from the St. Croix to the Sabine, make up thousands more.

It is important to observe, that this extensive country is admitted by geographers of foreign nations to have the most various soil, climate, and productions of any country upon the globe. The inevitable consequence is, that its capabilities for population and wealth are correspondingly great. No country can surpass it in the capacity for production.

Of the whole two millions two hundred thousand square miles of surface, only about two hundred and fifty-five thousand lie in the Atlantic slope, and two thirds of the whole lie in the valley of the Mississippi. To estimate rightly the population which, under the natural and well-known laws of increase, will arise and be readily maintained on this surface, it is necessary first to consider for a moment the *arability and fertility* of the Mississippi basin.

The first fact we observe is, that the rivers of this basin are remarkably long. For example, the main stream of the Mississippi rises near latitude 48 degrees, and joins the gulf of Mexico about 29 degrees, —thus running through about 20 degrees of latitude.

The Red river, of Louisiana, is estimated by Mr. Darby at one thousand miles in length. The Ohio, on the eastern side, is also one thousand, ascending to the heads of the Monongahela, and Allegany. The result of this is of vast importance. The rains and melted snows, which occasion the annual floods, fall on distant mountains, and raise those streams to great heights, pouring forth a vast volume of water. In proportion to the length of rivers, and their annual rise, must necessarily be the alluvial lands they feed. This is sufficiently illustrated by the river Nile, whose annual floods, coming from the distant mountains of Africa, occasion the fertility of Egypt.

In connexion with this fact, we have another of equal consequence; that in this vast region there is very little space occupied by mountains, marshes, or lakes, incapable of production. Almost the whole surface is *arable*. These great facts, taken in connexion with its locality in the midst of the temperate zone, determine the conclusion, that this great American basin is capable of producing more grain, and consequently maintaining more people, than any other equal space on earth. So far as our cultivation has extended, the practical result corresponds with this theory deduced from geographical facts.

The question of American population has become of great interest to speculators on the future progress and condition of the human family: for, heretofore, the United States has populated with a rapidity beyond any conceptions which had been formed from the basis of European statistics. In the various estimates which have been made of the progress of American population, there are two, particularly of note. One by Darby in a most excellent work,

"View of the United States;" and the other by Professor Tucker.

Mr. Darby's estimate was made before the census of 1830, and is therefore subject to two tests ;

	<i>Estimate.</i>	<i>Reality.</i>
1830	14,093,000	12,866,000
1840	19,335,000	17,063,000

But an important fact is to be noticed. The greatest error in Mr. Darby's estimate was in the number of *slaves*, which according to his estimate

Would have been in 1840	-	-	4,114,000
But were in fact	-	-	2,487,000

A difference of estimate equal to more than one half the whole number of slaves. It is to be observed that this *over estimate* of the growth of the slave population has pervaded the calculations of all writers on the subject. They have never allowed enough for the two great *slave-checks*, emancipation and bad condition. Mr. Darby proceeds to make an estimate for each year till 1940, one century from this time. The following are some of the results :

1860	-	-	-	35,167,000
1900	-	-	-	115,000,000
1940	-	-	-	386,000,000

Professor Tucker, in his calculations, published in Hunt's Merchants' Magazine, assumes that the ratio by which our population has increased will not long continue the same, but will gradually diminish as the number of persons increase to the square mile. This is mere matter of speculation; but when the people have become very dense, undoubtedly this is true; but as each new state is as fresh and fruitful as the oldest was, this check will not happen very soon. It is to be observed that the increase from 1830 to 1840 was 32½ per cent., which doubles in little more than twenty-four years. This ratio on the population extant one hundred years ago, will give the present actual result. So that this is the real natural increase of the American population. Professor Tucker's calculations give these results :

1900	-	-	-	80,000,000
1940	-	-	-	200,000,000

Comparing the estimates of Darby and Tucker, and taking the mean, it may be considered certain that, without Divine interposition to the contrary, one century will increase the population of the United States to *three hundred millions*.

It may be interesting to know the ultimate *capabilities* of the American territory. Ireland contains eighteen thousand six hundred miles square of surface, and eight millions of persons. Notwithstanding this diversity of population, Ireland has yet a great deal of waste land. It is certain that the United States can contain as great a proportional population as Ireland. Take the same proportion, and it gives the United States an ultimate capacity of containing *eight hundred millions of people*, more than the entire population of the globe! In a historical point of view, the period may not be long before that prodigious result is reached; for, in history, two or three centuries is not a very great portion of time. There is nothing in all this for the people of

the United States to make a boast of; but there is much for gratitude, and much for contemplation. The present generation will never see these astonishing results; but they are doing what will certainly influence widely these advancing millions. We do not believe that political society admits of much reformation in its old age, which was not attempted in its youth, any more than an old man is apt to change the habitus of his life. The foundations, we wish this vast political society to stand upon, we ought to have not only laid, but most firmly built up at this very time. In vain do we grow, if we grow not wisely. The power which the United States must have to maintain a happy liberty, is an intelligent moral power. They must do right, and do right intelligently. The great levers of this power are the school, the press, and the church. The school needs to be more elevated, the press to be purer and better. Can we not attain a higher and a better standard? To a nation like our own ignorance is death; the loss of virtue annihilation. We are trying to unite interests the most diverse and jarring, and to bind in one bond of union the hot and fiery disposition of the man living within the tropic, with the cold calculating inhabitant of the Green mountains; but men of all climates are not men of one mind—their character is moulded by the things passing around them: it takes a stamp from the scenes of early life, an impress from nature. The Italians, under all their changes of government, are continually the same people. Overcome, trodden down, trampled under foot, there is an elastic resiliency that for ever bears them up again. It matters not what public calamities betide them, or what national woes are stored up for them in the tomb of time, another Volta will reveal the mysteries of nature—another Canova will breathe the breath of life into the marbles of Carrara—another Catalina will enchant all Europe with her song. The same causes which determine these things there, are in tenfold action here. We have no surety of continuance, except from the increasing intelligence of our people.

OVER-EDUCATING.—At no period of youth should education be pushed beyond its proper limits, or the mind be worked above its powers; the welfare of the pupil demands the observance of this rule on the part of the master as well as the parents, more especially when the child belongs to that class of strumous children whose intellects are preternaturally acute. Unfortunately, however, these are generally the pupils selected by the masters to do credit to their establishment; every means are taken to encourage this premature manifestation of the mind, and to stimulate the child to renewed exertions; and thus the health is enfeebled, and even life is often sacrificed at a period of brilliant promise, when the hopes of friends are buoyed up by fallacious expectations, which a more rational system of education might have realized.



NINEVEH.

THE Babylonian and Assyrian empires were the most ancient in the world. They were both founded rather more than one hundred years after the flood. We read in Genesis that Asshur built Nineveh, which was the beginning of the empire of Assyria. Some think that the passage in Genesis should be translated, "*he went into Assyria and builded Nineveh,*" instead of "*out of that land went forth Asshur and builded Nineveh;*" which would make Nimrod the founder of this city, as well as Babylon and others. There is some reason for this opinion since "Nineveh" means "the habitation of Nin," a rebel, which Nimrod also signifies. It is also called the city of Ninus. Nineveh did not rise to greatness for many ages; when its second founder Ninus, enlarged it, and made it the greatest city in the world, until Babylon surpassed it, which was not till after its destruction. The circuit round the walls of Nineveh was from fifty to sixty miles; the walls were one hundred feet high, and so broad, that three chariots could drive abreast on the top. They were, fortified by one thousand five hundred towers, each one hundred feet high. All the vast space, enclosed however, was not built upon, as we may gather from the account of the population given in Jonah, when it is stated that there are in the city one hundred and twenty thousand children; this number would make the whole population to be about six hundred thousand. The space which the walls enclosed, would, if thickly peopled, contain very many more. This, however, rather increases, than diminishes, from the grandeur of the place, since it was laid out in exten-

sive parks, with magnificent buildings upon them, and detached houses with large gardens and fields; according to the custom in the great cities of the East, which in part continues even to this day. When Nineveh was at the height of greatness, and exceedingly wicked, Jonah was twice sent to cry against it. He was commanded to threaten the city with destruction within forty days. Wicked as the city was, it seemed to have more faith and obedience than the prophet at that moment, who was commissioned to cry against it. We know they repented at the preaching of Jonah;—the king proclaimed a fast, and all observed it,—from the king to the lowest of the people. The king made even the animals to fast, in order to express the sense of himself and of his people of their great wickedness. And God was so gracious as to accept their repentance, and did not overthrow the city at that time. It was, however, considered that the threatenings of the prophet Jonah were only deferred, since among other testimonies, we find in the Apocrypha that good men fully believed that Nineveh would be overthrown according to the word Jonah spake. And about two hundred years afterward it was overthrown, according to the fuller prophecy of Nahum, who lived above one hundred years after Jonah. We have no particular account anywhere of the dangers that Nineveh escaped on its repentance after the preaching of Jonah: but we have very particular accounts of the circumstances of its final destruction, about one hundred years after the prophecy of Nahum. Sardanapalus was the king of Assyria at this time: he was a weak and a wicked prince, who thought of nothing but pleasure. Arbaces (who is thought to be the Tiglath-Pileser of

Scripture), was governor of Media. One day this warrior found the king amusing himself dressed up as a woman engaged in women's occupations; and disdaining to obey so despicable a prince, he persuaded Belesis, governor of Babylon (mentioned as Baladan in Scripture), to dethrone him. They accordingly laid siege to Nineveh. But the place was so strong that it held out against all their attacks and endeavors. In fact, the king believed the town invincible, and besides, he trusted to an ancient prediction, which might perhaps have been founded on some words from the book of Nahum, since the ten tribes had been carried captive to Nineveh. The prophecy was, that Nineveh should never be taken till the river Tigris became its enemy. Sardanapalus, then, considering himself safe, continued his pleasures and festivities as usual. In the third year of the siege, there happened a season of long-continued heavy rains, by which the river Tigris became swollen; a mighty inundation, in consequence, came up against one part of the city, and threw down as much as two miles of the stupendous wall in which the king put his trust. The enemy took advantage of this breach and rushed into the city. Sardanapalus and his court were in the midst of festivity and luxurious indulgence. In a moment he gave himself up to despair. He got together a quantity of his wealth, shut himself and all his household in his palace, and setting fire to it with his own hands, all perished in the flames. The Babylonians and Medes then took possession of this magnificent city, which they despoiled and destroyed so that it was no more inhabited. Before long it was further so utterly broken up, that no trace even of its site remained. All the materials fit to use were transported to some distance, and a city built of them, at first still called Nineveh, but afterward Monsel. A great portion of the old city, however, entirely crumbled away; since the bricks in that part are so slightly baked in the sun, that, when exposed to the action of water, they return to their original dust. In fact, all that part of the country presents the appearance of swamps; in-

terspersed with bare mounds of earth, as may be seen by the view annexed of the supposed site of Nineveh. With Nineveh fell the great empire of Assyria, about seven hundred years before CHRIST, after having lasted one thousand four hundred years. Thus were multitudes of prophecies concerning Nineveh fulfilled in the most particular manner. Truly the gates of the rivers were opened, the palace dissolved, and with an overrunning flood the LORD made an utter end of the place. Her gates were set wide open unto her enemies, and the fire destroyed her. The strongholds in which she trusted were like fig-trees with the first ripe figs;—if they be shaken they fall: for the river had dissolved her foundation, and while her king and people were holden together as thorns, and drunken as drunkards, they were devoured as stubble fully dry. She was led away captive, and so utter an end was made of her, that her very foundations were carried away. For a time, perhaps, the cormorant (or pelican) and the bittern lodged in her upper lintels; their voice sung in the windows; desolation was in the thresholds, and the cedar work was uncovered; but before long, she was empty, void, and waste, Assyria was destroyed, and Nineveh, that great city, was a desolation and dry like a wilderness. The LORD has indeed made an utter end of her. So utterly and entirely is this mighty city swept away, that no traveller has yet ever been able to find what was her exact site. Lines of what were embankments, and now and then a stone and inscription, are all that remain to mark that there once might have been a city. If we wrote upon her now, we could not find words more applicable than those of the prophet Zephaniah, spoken some time before her downfall, while she was oppressing Israel in the pride and pomp of her highest glory. "This is the rejoicing city, that dwelt carelessly, that said in her heart, I am, and there is none beside me: how is she become a desolation, a place for beasts to lie down in! Every one that passes by her shall hiss, and wag his head."



A View of Monsel.

THE THERMOMETER.

It may naturally be supposed, that before we can understand the action of a heat-measurer (which is the precise meaning of the word "thermometer"), we ought to be familiar with the nature of the thing measured. But the truth is, that notwithstanding the investigations and experiments made by men of science, we know but little respecting heat except by its effects. Some think that it is a very subtle and attenuated fluid, capable of passing out of one substance into another; while others suppose it to be merely a vibration or intestinal motion among the particles of which bodies consist. We may therefore at once pass over this matter, as one still in dispute, with the remark that so far as popular notions are concerned, it seems most convenient to deem heat a fluid capable of transference from body to body.

Of the various effects which heat exerts on ordinary substances, some are familiar to us in our every-day experience, and others are only manifested by the careful experiments of philosophers; but the only effect which need be considered in this article is that of *expansion*, or that property by which a body enlarges in bulk according as its temperature becomes higher, or, in common parlance, according as it has more heat in it. This is the property on which the action of the thermometer depends.

If we have a small cylinder of metal which, when cold, precisely fits into a hole in another piece of metal, the cylinder, when heated, will no longer enter the hole or tube, the diameter having been increased by the process of heating. Or if we have an iron ball, which, when cold, will just pass through a ring, the ball will not do so when heated. The extent of expansion is very small, so as not to be perceived unless the apparatus be accurately made; but, so far as it goes, it is an unerring and inevitable effect. How it is brought about we do not know; but it would appear that the particles of metal are driven farther asunder by the accession of heat. If we have a bar of cast-iron at the temperature of the freezing-point, or 32° , and then heat it to the temperature of boiling water, that is, 212° , its length will be increased about one thousandth part of the whole; if it were of silver, the elongation would be about a five hundredth part; and if of lead, a three hundred and fiftieth; different metals possessing different expansive powers by the effect of heat.

But when we come to the case of liquids, we find that, not only do they expand by heat, but that they do so to a much greater extent than solids. Thus, mercury, when raised from 32° to 212° , expands about a fiftieth part, or fifty parts become fifty-one by the effect of the increase of heat; water expands about a twenty-eighth part; and alcohol about a ninth part. The last is a very extraordinary example, indicating that nine pints (or any other measure) of alcohol become ten by this increase of temperature.

Now it is found that, other things being equal, any given substance, say a piece of iron, will resume its former dimensions when the additional amount of

heat which has been imparted to it is withdrawn; and this proceeds on such an invariable rule, that the enlargement of bulk in a heated body becomes an index of the increase of temperature to which it has been exposed. If the body be a liquid, the change of bulk, being larger in ratio, is more perceptible. The way in which this property becomes useful to man may be thus illustrated. Suppose that in the process of brewing it be found that fermentation goes on more favorably at one degree of heat than at any other either higher or lower. The brewer wishes to take a note, to make a memorandum, by which he may produce that same favorable temperature at a future brewing. How is he to effect this? The color, the odor, the weight, if influenced at all, would be so to an extent too slight for his purpose. But let us imagine that he has a piece of any substance, say a metal rod, so susceptible to the influence of heat, that the length would be sensibly increased by the addition of a little of that agent. He might devise means for ascertaining its length when immersed in water at the freezing temperature, and also at the boiling temperature; and likewise when immersed in the fermenting liquor at a medium temperature; and might thenceforward use the metal rod as an indicator of the fermenting temperature; inferring that when the malt liquor is so heated as to give such and such a length to the iron rod immersed in it, that heat is the proper one for the process of fermentation.

We may suppose some such ideas as these to have passed through the mind of the philosopher who first constructed a thermometer; and that, knowing the superior expansibility of liquids, he next thought of using a liquid as the heat-measuring instrument. In the beginning of the seventeenth century, we hear of a thermometer being made, not indeed of liquid, but of air confined in a glass tube. Air, in being heated from 32° to 212° , increases its bulk about 37 1-2 per cent., and therefore furnishes a still more conspicuous instance of expansion than liquids; but there are various reasons why air is not suited for such a purpose.

The first successful attempt to make a thermometer in which the expansible body should be a liquid, seems to have emanated from the Florentine academicians, who employed spirits of wine in the following manner: A tube connected with a bulb was heated so as to expel a portion of air; and the open end of the tube was immersed in spirits of wine, which, as the bulb cooled, was forced up by atmospheric pressure into the stem and bulb. The bulb was then held downward, and a flame applied to it, so as to boil the spirits and drive the remaining air from the tube. While the vapor was issuing from the end of the tube, the flame of a blow-pipe was applied to it, by which the glass was fused, and the end closed. The bulb and part of the tube were thus filled with spirits of wine, the upper portion of the tube being nearly a vacuum. Whenever, then, this glass vessel was exposed to various heats, either in liquids or in the open air, the spirit enlarged or contracted its bulk, as the case might be, and therefore occupied a greater or less height than before in

the tube. The constructors made a mark to indicate the height to which the spirit rose when exposed to the cold of snow, and another mark, higher up, when exposed to the summer heat of Florence; and these two marks thus served in some measure as a guide.

From that time experiments in great abundance were made to ascertain what was the best liquid to employ, and what was the most convenient scale by which one temperature could be compared with another. Some used spirit of wine colored with cochineal; some proposed linseed oil; others water; but the body, which, all things considered, has proved most fitted for this purpose is mercury, the only metal which remains liquid at ordinary temperatures. Mercury enlarges in bulk more equably for equal increments of heat than most other bodies; it is more easily freed from air than either oil or alcohol, a quality of much importance in the construction of thermometers; it has a very convenient range, for while oil becomes viscid and tenacious at low temperatures, and alcohol boils before we can attain a high temperature, mercury retains its liquidity throughout a wide extent of change; and lastly, it accommodates itself to the temperature of surrounding bodies more readily than most other liquids. All these qualities pointed out mercury as the liquid best fitted for thermometers; and by the exertions of Réaumur and Fahrenheit, the construction of these instruments was brought to a point of much excellence. Fahrenheit, in order to make his instrument useful as a measurer, divided the stem, by marks on an attached frame, into a number of equal parts. He immersed the bulb containing the mercury in a mixture of snow and salt, which he erroneously thought would produce the most intense cold possible; then made a mark to indicate the height to which the mercury sank in the stem; then immersed the instrument in boiling water, and made a similar mark higher up. These two heights he made the limits of a scale, by dividing the difference between them into two hundred and twelve equal parts, called degrees (of which the symbol is $^{\circ}$), making the lowest, or *zero*, $= 0^{\circ}$, and the highest $= 212^{\circ}$. He afterward found that when the bulb was immersed in melting snow or ice, the mercury remained at the level marked 32° ; and from this circumstance we have been and still are accustomed to say that 32° is the freezing-point of water, for the thermometer gives the same indication when water is freezing as when ice or snow is melting.

When subsequent experiments showed that a much lower temperature than Fahrenheit's zero can be produced, it was necessary to have other degrees to indicate it, and these are preceded by the subtractive sign —. The thermometer of Réaumur, and that called the Centigrade, were afterward constructed, differing from Fahrenheit's chiefly in the gradation of the scale. In Réaumur's the freezing-point is marked 0° , and the boiling-point 80° ; in the Centigrade the freezing-point is 0° , and the boiling-point 100 ; so that two and one fourth of Réaumur, or one and four fifths of the Centigrade, are equal to 1° Fahrenheit. Fahrenheit's scale is used in England, the Centigrade in France, and Réaumur's in some

other parts of Europe. In reading French books wherein temperatures are mentioned, the scale employed is that of the Centigrade thermometer; and the corresponding degrees of Fahrenheit may be deduced therefrom by remembering that 0° of Centigrade is the same temperature as 32° Fahrenheit, and that a degree of Fahrenheit is equal to five ninths of a degree of the Centigrade. To convert a Centigrade indication to one of Fahrenheit, therefore, we multiply by 9, divide by 5, and add 32° . To perform the reverse operation, we subtract 32° , multiply by 5, and divide by 9. If Réaumur's thermometric indications are to be reduced to those of Fahrenheit: as 0° Réaumur is equal to 32° Fahrenheit, and as one degree of Fahrenheit equals four ninths of a degree of Réaumur, we multiply by 9, divide by 4, and add 32° ; and for the reverse operation, we subtract 32° , multiply by 4, and divide by 9. It will thus be found that—

41° Fahr.	equals	4° Réau.	or	5° Cent.
50°	"	8°	"	10°
59°	"	12°	"	15°
68°	"	16°	"	20°

Confining ourselves to Fahrenheit's thermometer, then, we find that it is simply a glass bulb and tube containing mercury to a certain height, which mercury, by the existence of a vacuum above it, is free to obey the expansive tendency which heat imparts to it; and by drawing marks on the wooden stem to which the tube is attached, to indicate the height to which the mercury rises when exposed to certain well-known heats, the instrument becomes a heat-measurer for future use.

The precautions necessary to be observed in constructing a thermometer we shall not enter upon, for they constitute a delicate branch of instrument making.

When a thermometer is placed in the open air, the mercury speedily attains the same temperature as the air, in obedience to the law which regulates the diffusion of heat. The heat affects the mercury through the glass passing to or from it, according as the mercury is colder or warmer than the air when first exposed to it. As to the actual *quantity* of heat which a given bulk of mercury contains, we are totally ignorant of it; all we know being that different substances have different capacities for heat, some requiring more heat than others to bring them to a given temperature.

Thus, if the quantity of heat necessary to raise pure water through 1° of temperature be expressed by 1,000, then 33 will express the quantity necessary to raise the temperature of mercury one degree; or, in other words, mercury expands thirty times more readily than water, when placed in similar circumstances, and is thus a much more convenient liquid for thermometers than water.

Some thermometers have been constructed so that they may leave a record of the highest and the lowest temperatures which have occurred during a period when the observer could not attend the instrument. A double thermometer, of mercury and of alcohol, is provided with little bits of enamel or of

steel, in such a manner that these shall remain stationary at the two extreme points of temperature which may have occurred during the absence of the observer. Rutherford, Six, Forbes, and others, have constructed these register-thermometers of various forms.

For all temperatures between the freezing and the boiling points of mercury (-39° and $+662^{\circ}$), a mercurial thermometer is that which is most conveniently employed; but for lower temperatures the thermometric liquid is generally alcohol, which has never yet been known to freeze. On the other hand, for very high temperatures, the expansion of solid bodies, instead of liquids, is made the means of measuring temperatures, as every fluid would go off into vapor. Such instruments are called pyrometers (fire-measurers), in which the expansion of a rod of metal at high temperatures is very accurately measured.

It will be readily understood that the object of using a thermometer in meteorological observation is not to determine the actual amount of heat in the air, but only the changes in the amount. Tables are given in various works, indicating the average temperatures in different countries,—at noon, at night, in summer, in winter, in sunshine, in shade, &c. But all these are merely intended as means of comparison with other indications obtained elsewhere, or at other times, with a view of deducing, if possible, some laws which will explain the true part which heat performs in the production of atmospheric phenomena. All the tables of temperature kept by the Royal Society and other scientific bodies, all the directions on this point given to Sir James Ross and other scientific travellers, all the thermometric averages given in our best almanacs, generally for the city or town where they are published, are intended as comparative data, whence future truths may perhaps be gleaned as to the diffusion of heat in the atmosphere, but not as indications of the actual amount of heat present therein. In this point of view the term "thermometer" is somewhat unfortunate, for we can not, correctly speaking, measure the heat in a body; we can only measure the effect which it produces in altering the dimensions of the containing body.

KNOWLEDGE OF THE WORLD.

PERHAPS a knowledge of the world, in the ordinary acceptance of the phrase, may mean nothing more than a knowledge of conventionalisms, or a familiarity with the forms and ceremonies of society. This, of course, is of easy acquisition, when the mind is once bent upon the task. The practice of the small proprieties of life to a congenial spirit, soon ceases to be a study; it rapidly becomes a mere habit, or an untroubled and unerring instinct. This is always the case, when there is no sedentary labor by the midnight lamp to produce an ungainly stoop in the shoulders, and a conscious defect of grace and pliancy in the limbs; and when there is no abstract

thought or poetic vision to dissipate the attention, and blind us to the trivial realities that are passing immediately around us. Some degree of vanity and a perfect self-possession are absolutely essential; but high intellect is only an obstruction. Men whose heads are little better than a pin's, have rendered themselves extremely acceptable in well-dressed circles. There are some who seem born for the boudoir and the ball-room, while others are as little fitted for fashionable society, as a fish is for the open air and the dry land. They who are more familiar with books than with men, can not look calm and pleased when their souls are inwardly perplexed. The almost venal hypocrisy of politeness, is the more criminal and disgusting in their judgment, on account of its difficulty to themselves, and the provoking ease with which it appears to be adopted by others. The loquacity of the forward, the effeminate affectation of the foppish, and the sententiousness of shallow gravity, excite a feeling of contempt and weariness that they have neither the skill nor the inclination to conceal.

A recluse philosopher is unable to return a simple salutation without betraying his awkwardness and uneasiness to the quick eye of a man of the world. He exhibits a ludicrous mixture of humanity and pride. He is indignant at the assurance of others, and is mortified at his own timidity. He is vexed that he should suffer those whom he feels to be his inferiors to enjoy a temporary superiority. He is troubled that they should be able to trouble him, and ashamed that they should make him ashamed. Such a man, when he enters into society, brings all his pride, but leaves his vanity behind him. Pride allows our wounds to remain exposed, but makes them doubly irritable; but vanity, as Sancho says of sleep, seems to cover a man all over as with a cloak. A contemplative spirit can not concentrate his attention on minute and uninteresting ceremonials, and a sense of unfitness for society makes the most ordinary of its duties a painful task. There are some authors who would rather write a quarto volume in the praise of women, than hand a fashionable woman to her chair.

The foolish and formal conversation of polite life, is naturally uninteresting to the retired scholar, but it would, perhaps, be less objectionable if he thought he could take a share in it with any degree of credit. He has not the feeling of calm and unmixed contempt; there is envy and irritation in his heart. He can not despise his fellow-creatures, nor be wholly indifferent to their good opinion. Whatever he may think of their manners and conversation, his uneasiness evinces that he does not feel altogether above, or independent of, them. No man likes to seem unfit for the company he is in. At Rome every man would be a Roman.

PYTHAGORAS is said to have invented harmonic strings, in consequence of hearing four blacksmiths working with hammers, whose weights he found to be 6, 8, 9, and 12; or rather as their squares, 36, 64, 81, 144.



REV. GEORGE WHITEFIELD, A. M.

MR. WHITEFIELD's father was a wine merchant at Bristol, and afterward an innkeeper in the city of Gloucester, where George, the youngest of six sons, was born, in 1714. When he was two years of age, his father died, and his education was somewhat neglected; but between the age of twelve and fifteen, he made considerable proficiency in the Latin classics at the public grammar school. His mother's circumstances not being affluent, George assisted her in the business for about two years; but the prevailing bent of his mind beginning to develop itself, in unusual devotional studies and the composition of sermons, one of which he dedicated to his eldest brother at Bristol, measures were taken for his education for the church.

At the age of eighteen, Whitefield entered Pembroke College, Oxford, where he distinguished himself by his austerities and habits of devotion, and found in Mr. Charles Wesley a most kind and sympathizing friend. Two years after, in 1734, he joined the little band of pious men (Mr. Charles Wesley, Mr. James Hervey, Mr. Morgan, and Mr. Kirkham), who had associated with Mr. John Wesley for the study of the Greek Testament, and the mutual advancement of their personal religion; and thus originated the *Methodists* in England.

Deeply affected with the prevailing ignorance and impiety, they began their career in the city of Oxford, seeking all opportunities for diffusing religious knowledge among the poor, and the wretched inmates of the prisons.

His father dying in 1735, Mr. John Wesley was induced to accompany General Oglethorpe to the new colony of Georgia, in North America, as chaplain, and in the hope of preaching the gospel to the Indians. Whitefield returned to his native city, Gloucester, where he was successful in the conversion of several young men, who united with him in pious exercises. He made frequent visits to the county jail, in which he read and prayed every day with the prisoners. His fame for piety and zeal reached the ears of Dr. Benson, Bishop of Gloucester, who sent for the young Methodist, declaring that he should think it his duty to ordain him when he chose to make the request, though he was only twenty-one years of age; and after having examined the articles of the church of England, and studied with prayer the epistles to Timothy, he made application to the bishop, and was ordained *deacon*, June 30th, 1736. The following Sunday he preached his first sermon, "On the Necessity and Benefits of Religious Society," in the church of Gloucester, in which he had been baptized.

"Curiosity," says Whitefield, "drew a large congregation together. The sight at first a little awed me. But I was comforted with a heart-sense of the Divine presence; and soon found the advantage of public speaking when a boy at school, and of exhorting and teaching the prisoners, and the poor people at their private houses, while at the university. By these means I was kept from being daunted. As I proceeded, I perceived the fire kindled, till at last though so young, and amid a crowd of those who knew me in my childish days, I trust I was enabled

to speak with some degree of authority. Some few mocked, but most for the present seemed struck; and I have since heard, that a complaint was made to the bishop, that I drove fifteen mad the first sermon. The worthy prelate wished the madness might not be forgotten before the next Sunday."

Bishop Benson offered him a curacy: but he preferred returning to Oxford, that he might prosecute his studies. Soon after, he accepted an invitation to officiate at the chapel in the Tower of London, and preached his first sermon in the metropolis in August, 1736, at Bishopsgate church, to a deeply affected congregation. He continued two months at the Tower, where he took great pains with the soldiers, and several young men who attended his sermons.

Letters at this time from the Wesleys, made him desirous of visiting America, and Mr. Charles Wesley coming to England to procure more laborers, Whitefield agreed to go; for which he waited on General Oglethorpe, who had returned to London. He did not embark till December, 1737; in the twelve months intervening, he preached in Bristol, Bath, Gloucester, and London, being invited by the committees of various charities on account of his popularity. The subjects of his discourses were the essential doctrines of vital Christianity; and such were his natural powers of oratory, sanctified by a pious earnestness of manner, that multitudes were drawn to hear him. The churches were crowded to excess, and thousands were unable to gain admittance. He generally preached *nine times* every week; and early on Sunday mornings the people were seen flocking to the churches with lanterns in their hands, and conversing on the blessings of eternal salvation.

Mr. John Wesley returned to England, where he was informed that Whitefield had set sail for Virginia: he was well received by the magistrates, officers, and people; but he found the new colony in the most miserable condition. Beside religious visiting, he generally preached twice a day, and four times on the Lord's day: and, for the benefit of the Georgians, he projected and ultimately completed an *Orphan Asylum*, similar to that surprising monument of the charity of Professor Frank, in Germany. "I was really happy," says he, "in my little foreign cure, and could have cheerfully remained among them, had I not been obliged to return to England to receive priest's orders, and to make a beginning toward laying a foundation to the Orphan House."

Whitefield arrived in London December 8, 1738, where he again enjoyed the society of his friend, Mr. Wesley, and they began to form religious societies in different parts of London; the principal place of meeting being in a large room which they had hired in Fetter Lane. In January, 1739, he received priest's orders from his good friend, Bishop Benson. He complied with invitations to preach in London, Oxford, and Bristol; by which thousands were awakened to a sense of religion; but the churches were not sufficient to contain the crowds that followed him.

On account of his preaching the necessity of spiritual regeneration, the pulpits in many places were re-

fused to him by the clergy; and at Bristol he determined, after much reflection and prayer, to commence preaching in the open air. 'This practice he began among the rude and ignorant colliers at Kingswood, near Bristol, of whom he writes, "Having no righteousness of their own to renounce, they were glad to hear of a Jesus who was a friend of publicans and sinners, and came not to call the righteous, but sinners to repentance! The first discovery of their being affected was to see the white gutters made by their tears, which plentifully fell down their black cheeks, as they came out of their coal pits. The change was visible to all, though numbers chose to impute it to anything rather than the finger of God."

Besides the colliers, and thousands from the neighboring villages, persons of all ranks flocked daily to hear him out of Bristol; and he was soon invited to preach by some of the more respectable, in a large bowling-green in the city itself. Such success attending his labors in *field-preaching*, he wrote to Mr. Wesley, who had never been at Bristol; and as he, as well as Mr. Whitefield, had been refused the use of churches, he followed the practice of his younger friend, having the sanction of our Saviour's example in calling sinners to repentance, both in highways and in the fields.

Whitefield left Mr. Wesley full of labors at Bristol, and visited many of the principal towns in the kingdom, collecting for his Orphan House in Georgia. In Wales, he encouraged the zealous Howel Harris, under whose ministry the power of religion was reviving. Being unable to obtain the use of churches in London, he ventured, on Sunday, to preach in Moorfields. Though threatened by the mob, a Divine blessing evidently attended these labors; and the same evening he preached on Kennington Common to a multitude. For several months, Moorfields, Kennington Common, and Blackheath, were the chief scenes of his powerful ministry, and his auditors often consisted of *twenty thousand* persons. It is said their singing could be heard two miles off, and the voice of the preacher at the distance of a mile.

The building of a school having been commenced at Bristol, Mr. Whitefield visited that city, and put Mr. Wesley in full possession of the property; and then introduced him at Gloucester as a field-preacher, and embarked a second time for America, in August, 1739, where he was received with a cordial welcome by many of the ministers, and by thousands of the people, who expressed their delight to see Puritanism revived by a minister of the church of England; and Mr. Whitefield found himself at home among these descendants of the persecuted English Puritans, to whom his ministry was blessed in an extraordinary manner. 'Two years after, he returned to England, for the purpose of making further collections for his great work in Georgia. "But," says he, "what a trying scene appeared here! During my journey through America, I had written two well-meant, though injudicious letters against England's two great favorites, "The Whole Duty of Man," and "Archbishop Tillotson," who, I said, knew no more of religion than Mohammed. Mr. John Wesley had been prevailed on to preach and print in favor of

perfection and universal redemption, and very strongly against election, a doctrine which I thought, and do now believe, was taught me of God; therefore could not possibly recede from. I had written an answer, which, though revised and much approved by some judicious divines, I think had some too strong expressions about absolute reprobation, which the apostle leaves rather to be inferred than expressed."

Mr. John Wesley had become opposed to the doctrine of election, as taught in the seventeenth article of the church; and the use made of the writings of Mr. Whitefield was to inflame the societies against him, as one who had dreadfully fallen. He says, "Ten thousand times would I rather have died than part with my old friends. It would have melted any heart to see Mr. Charles Wesley and me weeping after prayer, that, if possible, the breach might be prevented. Once I preached in the Foundry (a place which Mr. John Wesley had procured in my absence) on Gal. iii. but no more." Preaching in Moorfields, he writes, "I had the mortification of seeing numbers of my spiritual children, who but a twelvemonth ago would have plucked out their eyes for me, running by me while preaching, disdaining so much as to look at me, and some of them putting their fingers in their ears, that they might not hear one word I said. The like scene opened at Bristol, where I was denied preaching in the house I had founded: busy-bodies on both sides blew up the coals. A breach ensued; but as both differed in judgment, and not in affection, and aimed at the glory of our common Lord, though we hearkened too much to tale-bearers on both sides, we were kept from anathematizing each other, and went on in our several ways, being agreed in one point: endeavoring to convert souls to the blessed Redeemer."

Thus these two distinguished men separated in their operations, and became the leaders of the two branches of the Methodist body,—the *Calvinist*, and *Arminian*.

They both held those peculiarities of the gospel, by which a sinner is pardoned, sanctified, and saved; each embracing the all-sufficient atonement of the incarnate Son of God, and the regenerating, purifying influence of the Holy Spirit; but Mr. Wesley rejected the doctrine of predestination and election, as stated in Article XVII. of the church of England; while Mr. Whitefield became more fully confirmed in its truth. The question of *general* and *particular* redemption thus occasioned a difference of sentiment, and for a short time a shyness between them: but they kept up an epistolary correspondence, and lived and died united in heart. This will appear partly by a clause in Mr. Whitefield's will, in which he says, "I leave a mourning ring to my honored and dear friends, and disinterested fellow-laborers, the Rev. John and Charles Wesley, in token of my indissoluble union with them in heart and affection, notwithstanding our difference in judgment about some particular points of doctrine."

Mr. Whitefield having been excluded from Mr. Wesley's connexion, and generally from the pulpits of the established church, was necessitated to seek other places in which to prosecute his zealous labors.

Mr. Cennick, with others of the first Methodists, being of Mr. Whitefield's sentiments, joined with him at Bristol, and assisted him to build another preaching house at Kingswood, among the numerous colliers. Here, and at several other places, they preached to very large congregations. Being ordered to attend the House of Commons, to give information concerning the state of Georgia, the Speaker received him courteously, and assured him that there would be no persecution in the reign of George the Second. Thus encouraged, he pursued his plans with ardent zeal; and his friends procuring a piece of ground in Moorfields, London, a large shed was erected as a temporary shelter from the weather, and called "The Tabernacle." Mr. Whitefield at first disliked the site of his new temple, on account of its vicinity to the Foundry, the preaching house of Mr. Wesley, (where the "City Road chapel" now stands), which gave it the appearance of opposition. But upon this occasion he remarks: "All was wonderfully overruled for good, and for the furtherance of the gospel. A fresh awakening immediately began. Congregations grew exceedingly large; and, at the people's desire, I sent (necessity reconciling me more and more to lay-preaching) for Messrs. Cennick, Harris, Seagrove, Humphries, and several others, to assist." New scenes of usefulness opened to him daily; and numerous invitations being sent to him from different places, he was enabled to visit them, leaving his lay assistants to preach among his settled congregations. He continued his practice of field-preaching, not only through all parts of England, but in Wales, Scotland, and Ireland; and his ministry was crowned with extraordinary success.

In the year 1748, Mr. Whitefield was introduced to the acquaintance of the Countess of Huntingdon, in whom he found an intelligent, pious, faithful, and generous coadjutor, and he became one of her ladyship's chaplains. In 1753, he opened his new TABERNACLE in Moorfields, London, a building capable of holding about four thousand persons; and in the same year he opened the tabernacle at Bristol; two years after, another at Norwich; and in 1756, his new chapel in Tottenham Court road, still larger than that in Moorfields.

But to follow this apostolic servant of Jesus Christ through all his extensive travels, and to describe his wonderful success in turning sinners to God, would require volumes. In the course of his ministry, which included thirty-four years and a quarter, Mr. Whitefield crossed the Atlantic ocean *thirteen times*, and preached *EIGHTEEN THOUSAND SERMONS*, which was something *more than five hundred a year!* His usefulness in the conversion of sinners to God corresponded with his indefatigable labors. Mr. Whitefield died in America, September 30, 1770, at New buryport, near Boston.

The death of Whitefield was lamented as a great public calamity, both in England and in America; and many funeral sermons were preached and published, to improve the sorrowful event, both by the ministers of the established church and Dissenters. among the former may be mentioned Mr. Romaine, Mr. Venn, Mr. Newton, Mr. Madan, and Mr. Top-

lady; and among the latter, Dr. Trotter, Dr. Gibbons, Mr. Brewer, and others.

Mr. Wesley having quoted the high testimonies of the public newspapers, says of his departed friend and fellow-laborer: "These accounts are just and impartial; but they go little further than the outside of his character: they show you the preacher, but not the man,—the Christian,—the saint of God. May I be permitted to add a little on this head, from a personal knowledge of forty-years? Mention has already been made of his unparalleled zeal, his indefatigable activity, his tender-heartedness toward the poor. But should we not likewise mention his deep gratitude to all whom God had used as instruments of good by him, of whom he did not cease to speak in the most respectful manner, even to his dying day? Should we not mention, that he had a heart susceptible of the most generous and the most tender friendship? I have frequently thought that this, of all others, was the distinguishing part of his character. How few have we known of so kind a temper, of such large and overflowing affections! Was it not principally by this that the hearts of others were so strangely drawn and knit to him? Can anything but love beget love? This shone in his very countenance, and continually breathed in all his words, whether in public or private. Was it not this which, quick and penetrating as lightning, flew from heart to heart—which gave life to his sermons, his conversation, his letters? Ye are witnesses. If it be inquired, what was the foundation of his integrity, or of his sincerity, courage, patience, and every other valuable and amiable quality, it is easy to give the answer. It was not the excellence of his natural temper, nor the strength of his understanding; it was not the force of education; no, nor the advice of his friends. It was no other than faith in a bleeding Lord; faith of the operation of God. It was a lively hope of an inheritance incorruptible, undefiled, and that fadeth not away. It was the love of God shed abroad in his heart by the Holy Ghost, which was given unto him, filling his soul with tender, disinterested love to every child of man. From this source arose that torrent of eloquence which frequently bore down all before it; from this that astonishing force of persuasion which the most ardent sinners could not resist. This it was which often made his head as waters, and his eyes a fountain of tears. I may close this head with observing, what an honor it pleased God to put upon his faithful servant, by allowing him to declare his everlasting Gospel in so many various countries, to such numbers of people, and with so great an effect on so many of their precious souls!"

Mr. Toplady, in his funeral sermon for Mr. Whitefield, says, "I deem myself happy in having an opportunity of thus publicly avowing the inexpressible esteem in which I held this wonderful man; and the affectionate veneration which I must ever retain for the memory of one whose acquaintance and ministry were attended with the most important spiritual benefit to me, and to tens of thousands beside.

"It will not be saying too much, if I term him the Apostle of the English empire, in point of zeal for God, a long course of indefatigable and incessant la-

bors, unparalleled disinterestedness, and astonishingly extensive usefulness. England has had the honor of producing the greatest men in almost every walk of useful knowledge. At the head of these are, first, Archbishop Bradwardine, the prince of divines; second, Milton, the prince of poets; third, Sir Isaac Newton, the prince of philosophers; fourth, Whitefield, the prince of preachers."

Hume, the historian, having heard Mr. Whitefield preach at Edinburgh, was asked by an intimate friend, what he thought of his preaching. Hume replied, "He is, sir, the most ingenious preacher I ever heard. It is worth while to go twenty miles to hear him." He then repeated the following passage, which he heard toward the close of the discourse. "After a solemn pause, Mr. Whitefield thus addressed his numerous audience: 'The attendant angel is just about to leave the threshold, and ascend to heaven. And shall he ascend, and not bear with him the news of one sinner, among all this multitude, reclaimed from the error of his ways?' To give the greater effect to this exclamation, he stamped with his foot, lifted up his hands and eyes to heaven, and with gushing tears cried aloud: 'Stop, Gabriel! Stop, Gabriel! Stop, ere you enter the sacred portals, and yet carry with you the news of one converted sinner to God!' He then, in the most simple, but energetic language, described what he called a Saviour's dying love to sinful man; so that almost the whole assembly melted into tears. This address was accompanied with such animated, yet natural action, that it surpassed anything I ever saw or heard in any other preacher."

Happy for that proud infidel philosopher, had he been melted to penitential tears at the description and appeal of the apostolic preacher, so as to have been led truly to believe what Whitefield correctly called "*a Saviour's dying love to sinful man!*"

THE ALPHABET.—Among all the productions and inventions of human skill, there is none more admirable and useful than writing, by means whereof a man may copy out his very thoughts, utter his mind without opening his mouth, and signify his pleasure at a thousand miles, distance, and this by the help of twenty-six letters, and fewer in some places; by variously joining and combining of which letters, all words that are utterable and imaginable may be framed; for the several ways of joining and combining of these letters amount (as Clevisius the Jesuit has taken the pains and time to compute) to 585,261,673,849, 766,400 ways, so that all things that are in heaven or earth, that are or were, or shall be, that can be uttered or imagined, may be expressed and signified by the help of this marvellous alphabet, which may be inscribed in the compass of a farthing.

HOPE.—What is not hope to man? the vitality of vitality, the life of his life, the great motive power of all exertion, the strengthener, the consoler, the stay, the great battle-sword that cleaves through the armor of all adversaries, the conqueror that strikes down opposition, tramples on reverses, bursts open the gates of the tomb, and treads upon the neck of death!



A View of Constantinople.

CONSTANTINOPLE.

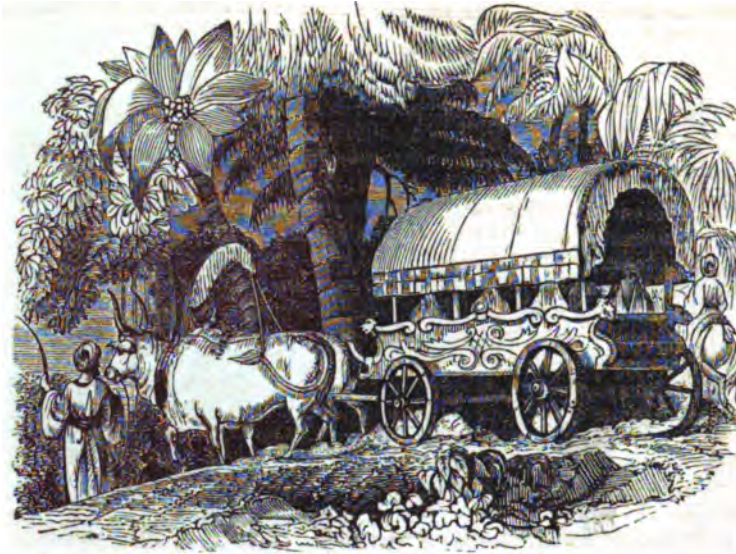
THE celebrated town of Constantine, or ancient Byzantium, is called by the Turks, Stamboul. It is the capital of the Turkish empire, and is situated on the west side of the Bosphorus, or straits of Constantinople, between the Black sea and the sea of Marmora.

The view round the town has been much admired ; its elevated position, the great number of trees, houses, and minarets, the majestic entrance of the Bosphorus the spacious harbor surrounded by the suburbs of Galata, Pera, and St. Dimitri, the large city of Scutari in front, the verdant hills behind it, the Propontis and its picturesque islands, Mount Olympus on the back ground, its snowy summits and the fruitful fields of Asia and Europe on every side, present a succession of the finest landscapes. The stranger observes not without emotion the natural beauties in the neighborhood, and admires the excellent position of a city that may be so quickly supplied with provisions, and so easily defended in the event of a siege. From its safe and commodious harbor, it seems destined by nature to reign over two seas and two continents ; but the first impression is soon effaced by examining the interior. Constantinople is ill built ; the streets are narrow and no part of them well paved ; its irregular and pitiful houses are like clay and wooden cottages ; conflagrations are of ordinary occurrence, and the plague breaks out every year. The moral feelings of the stranger are outraged, the haughty and solemn air of the mussulman is contrasted with the humble, timid, and lowly mien of the Jew ; a foreigner, before he is aware of the difference in

the dress, may discover from a man's appearance whether he is a mussulman or a raja. The Fanar, which forms a part of the town, is inhabited by the wretched descendants of the Byzantine families ; these degraded men crouch under the mussulman's sword, assume the titles of princes and cheapen the temporary sovereignties of Wallachia and Moldavia ; faithful representatives of the Low Empire, submissive to every power, to amass wealth is the sole business of their lives, by honest or dishonest means is to them equally indifferent.

The seraglio or the principal palace has been considered a great ornament to the town ; it must be confessed that the view from the side near the Bosphorus is romantic, but the building is a confused mass of prisons, barracks, and gardens ; it forms a separate city, the seat of Asiatic debauchery and African slavery ; honor, generosity, compassion, the best feelings of our nature are banished from its walls.

One venerable monument of antiquity, the church dedicated to divine wisdom by the emperor Justinian in the sixth century, now vulgarly called Saint Sophia, has fortunately been spared : but it is certain that it must have been demolished had it not been converted into a mosque ; its effect is imposing, although the style of architecture is much inferior to that which distinguishes the classical epoch. The ancient Hippodrome is now a public walk ; the Cyclobion, or the modern castle of the seven towers, is but a weak citadel in which the ambassadors of the powers at war with the Porto are confined. The most remarkable mosques are those of the sultan Achmet and the sultana Valide, and another called the Solimami ; such are the principal edifices ; they are seen to the



Turkish Arabah.

greatest advantage when the whole town is illuminated; they might add perhaps to the beauty of a landscape, but when examined singly, they appear without majesty and without grace. We are apt from their frail and clumsy appearance, to connect them with the works of men in the pastoral state.

The population of Constantinople is variously estimated from three hundred thousand to five hundred thousand. About one half are Turks, and the remaining Greeks, Christians, Armenians, Franks, and Jews.

Pera and Galata, two large suburbs, are situated beyond the harbor of Constantinople, which is about six thousand yards in length, and from three hundred to five hundred in breadth. Pera is built on a height; it is the residence of the foreign ambassadors and the Europeans who are not permitted to remain at Constantinople; the great warehouses and granaries are situated at Galata, which is near the port and custom-house; it is surrounded with ditches and walls flanked with bastions. The inhabitants of these suburbs consist chiefly of foreigners from all nations; their number is so great that Pera and Galata have been compared to the tower of Babel; the languages spoken are the Turkish, Greek, Hebrew, Armenian, Arabian, Persian, Russian, Wallachian, German, French, Italian and Hungarian. The degenerate Greeks surpass all the strangers in espionage and political intrigue.

A great many villages almost concealed by lofty trees are scattered along the shores of the Bosphorus; it is there that bechick-tadch or the summer palace of the sultan is situated. Belgrade appears at a distance behind it, and is inhabited one season of the year, by the most wealthy Christian families in Pera and Galata; it is sheltered from excessive heat; the air is pure and salubrious, an extensive plantation of fruit-trees, verdant meadows, and limpid streams, adorn the immediate vicinity; the town is

not exposed to the plague, or the frequent fires that happen in the capital; if the country were under a better government, almost every part of it might be as delightful as the neighborhood of Belgrade. The suburb of Agoub lies beyond two portions of Constantinople allotted to the Greeks and Jews, and at no great distance from the fresh water walk, one of the finest near the city; the harbor there is comparatively narrow, and the gulf is not unlike a large river.

Adrianople (called by the Turks Adranah), on the Mariza, in European Turkey, one hundred and thirty miles northwest of Constantinople, is the second city of the empire, rising above groves of cypress and gardens of roses; the Hebrus, increased by many tributary streams, descends from the hills behind, turns southward and flows past the town, of which the population is not less than one hundred thousand souls.

THE DEATH OF PLANTS.

PLANTS, as well as animals, unless destroyed by casualties or disease, die of old age. Several of the *mucoræ* (moulds), *byssi*, and *mushrooms*, perish in a few days or even hours. The *herbaceous* plants called annuals die within the year, and this almost independently of climate; the propagation of the species having been secured by the ripening of the seed. In the biennials the flower-stem is not evolved and seed produced until the second year, after which the plant perishes. In the perennials the parts exposed to view perish annually in like manner; but the root surviving, new stems arise from it every spring. In most *woody* plants death does not occur until fructification has recurred for a greater or less number of years; some of the monocotyledona, how-

ever, as the sago-tree, and the umbrella-tree (*corypha umbraculifera*, with immense fan-formed leaves of eight or ten yards in length, only bear fruit once, and then die.

If the herbaceous perennials and woody plants were viewed as simple individuals, they would almost seem as not liable to death from old age; but in these plants we must distinguish between the new part, which lives and grows, and the old, which has ceased to do so, and is therefore dead. When these plants propagate their race by seeds, the seed must be considered as an embryo plant, a new and different individual, independent and unconnected with that from which it derived its existence; but when they are propagated by a continuous evolution of like parts, these are as a series of individuals, which issue from the surface, the one of the other, in an uninterrupted sequence, continuing, however, in some instances permanently united. But in neither of these cases are the *individuals* perpetuated, although their succession or *race* becomes so.

All the parts of the young herbaceous annual are susceptible of enlargement; the cells of the tubes, at first very small, are soon extended in every way. In process of time the membranous walls, fortified by the absorption of nutritious juices, grow thicker, and lose by degrees their original pliancy. The membranes once hardened, excitement ceases to be produced, and the vital functions are at an end; nourishment is no longer drawn, growth is at a stand, and the plant, unable to resist the ceaseless attacks of the external agents employed by nature for its destruction, decays in a short time.

For the same reasons the stems of herbaceous perennials decay, but in these the root is regenerated by a succession of evolutions. So too in the shrubs and trees, the liber, or inner bark, represents the herbaceous plant, and, like it, has only a short existence as such. For when vegetation revives in the woody part of a plant, on the return of spring, it is because a new liber has replaced, under the bark, the liber of the preceding year, which has hardened and become wood. This explanation will equally apply to the meanest shrub and to the giants of the vegetable world, such as the cedars of Lebanon, nine yards in girth, from the measurements of Labillardière; the stupendous chestnuts of Mount Etna, one of which Howell states measured seventeen yards in circumference; and the baobab of Senegal ten or twelve yards in girth, and, according to the computation of Adanson, five or six thousand years old; in all of these vegetation is maintained by the annual production of the thin layer of liber at the inner surface of the bark. The concentric layers of preceding libers constitute the mass of the wood, serving merely to support the newly-formed parts, and to conduct to them their nutritious juices. Nay, for the performance of these offices this wood need not always be entire, for willows and chestnuts, even when quite hollow, will continue to grow with vigor; but in their soundest state the removal of the bark is their destruction.

Thus, as the old parts of the roots of the herbaceous perennial continue constantly to die away

under ground, and are succeeded by new ones, and the concentric layers which constitute the wood or heart of the trunks of trees are no other than the accumulated remains of bygone generations in which vegetation and life are entirely extinct, we find that the immortality imparted to this form of existence is only apparent, and that the individuals endowed with it perish in due course, as all other forms of organized bodies.

As the age of the tree in nowise diminishes the vigor of the liber, and as a sound well-grown scion from an aged but healthy tree affords as good a cutting for propagating as that taken from a younger; so, we may infer, that according to the course of nature, the progress of regeneration by continuous evolution would never be arrested, if the overgrown size of the branches and stem, the hardening of the wood, and the obstruction of the channels which permeate it, did not impede the circulation of the sap, and consequently its access to the liber.

The life of trees has been commonly divided into three stages—infancy, maturity, and old age. In the first the tree increases in strength from one day to the other; in the second it contains itself without sensible gain or loss; in the third it declines. These stages vary in every species according to soil, climate, aspect, and the nature of the individual plant. The common oak usually lasts from six to nine hundred years, and the stages of its existence are of about two or three hundred years each. It, as well as the chestnut, has been observed to live longer upon a dry than a wet soil.

Every species, to attain its due growth, requires a certain temperature to be found within limits of a greater or less extent. The oak, the fir, the birch, &c., thrive most toward the north; the ash, the olive-tree, &c., in the warmest parts of Europe; the baobab, the ceiba, and the palm, flourish only between the tropics. Sir Humphrey Davy considered that the different quantities of carbon furnished by the various woods would afford a tolerably accurate measure of their respective longevities; those in which earthy and carbonaceous substances prevailed being the most enduring, and those in which gaseous elements proportionally abounded, the least so. However well this rule may apply to the indigenous trees of Europe, it is not probable that many of the tropical trees of great longevity (as the baobab, &c.), but of loose and soft texture, would yield the same proportion of carbon as oaks, elms, &c., whose existence is comparatively brief. The same distinguished writer also believed that trees of the same species grow to a more advanced period in the north than in the south; but in truth every tree lives the longest when it is in that climate which is best adapted to its nature: and thus, although more oaks and firs are found of a great age in the north than in the south of Europe, yet, on the other hand, the ashes of Calabria and Sicily are more long-lived than those of Great Britain and Prussia.

In proportion as a tree increases in size, the vessels of its ligneous layers become obstructed, and the sap circulates with less freedom; hence, absorption and secretion decrease after youth, in proportion as

the bulk of the tree is enlarged; the liber is less vigorous; the buds and roots become fewer and feeblar; the branches wither; the stem decays at the head; water settles in the injured parts; the wood moulders away. Ere long, the annual liber loses the power of completing its regeneration; new parts are no longer evolved, and the tree perishes. The tree after death is overrun by various cryptogamus plants; it attracts and imbibes moisture no longer, as formerly, by the absorbing powers of its organs, but by the hygrometrical property it derives from its porosity, and the chymical action of the elements which compose it; the oxygen of the atmosphere consumes a part of its substance; water is generated and carbonic acid disengaged; the rest is resolved into vegetable mould (humus), a fat brown powdery substance, eminently fertile, in which we find, in different proportions, the same elements as those on which vegetables are composed, and which have the faculty of decomposing air and combining with its oxygen.

It is thus the career of plants is terminated in the order of things. The earth they adorned in the period of vegetation is fertilized by their remains: germes impregnated with new life have already been confided to its bosom, ready to supply the bygone generations, and, through the death of individuals, an unfading youth is secured to the race.



ANCIENT PHYSICIANS.

It appears that the art of embalming was regarded as a branch of the medical profession. We shall not here add anything on the subject of embalming

to the information which has been given at page 180 of this work. The Jews appear to have derived from the Egyptians the very little they ever knew of medical science and practice. The following particulars are condensed chiefly from a larger statement by Mr. Wilkinson.

We suppose that Joseph's "servants, the physicians," were rather those who were employed by him as occasion required, than engaged exclusively in his service. There is a peculiar propriety in the use of the plural "physicians," for no family in Egypt could manage with the services of one only. Matters were so arranged by the Egyptians—and Herodotus regarded it as a proof of their great attention to health, and of their wisdom—that no doctor was allowed to practise any but one branch of the profession. Some were oculists, who only studied diseases of the eye; others attended solely to complaints of the head; others to those of the teeth; some again confined themselves to complaints of the intestines; and others to secret and internal maladies; accouchers being usually, if not always, women.

The previous study for the profession consisted in acquiring an acquaintance with the rules established and the practice followed by their ancestors; for it was believed that, while much danger might ensue to patients from rash experiments, few persons could be capable of introducing any new treatment superior to that which had been sanctioned and approved by the skill of the old practitioners. Hence a doctor was adjudged to be guilty of a capital offence if his patient died under any other medical treatment than that which precedent warranted.

The medical profession, as a body, was paid by the government; but they were not thereby precluded from receiving fees, except on a foreign journey or on military service, when patients were visited free of expense.

The following observations, derived chiefly from the works of Lightfoot, Professor Jahn, with some additional matter, comprise all the information we possess concerning the state of medical science among the Hebrews and their neighbors.

At Babylon those attacked with a disease were left in the streets, for the purpose of learning from such as might pass them, what practices or what medicines they had found of utility when afflicted in a similar manner. This was perhaps done also in other countries: the Egyptians carried their sick into the temples of Serapis; the Greeks carried theirs into those of Esculapius. In both these temples the means by which various cures had been effected were preserved in writing. With the aid of these recorded remedies, the art of healing assumed in the course of time the aspect of a science. It assumed such form first in Egypt, and at a much more recent period in Greece; but the physicians of the former were soon surpassed in skill by those of the latter country. That the Egyptians, however, had no little knowledge of medicine may be gathered from what is said in the Pentateuch respecting the marks of leprosy, in which the symptoms of the various kinds and states of the disease are discriminated with

great precision. This and other medical information which the Israelites brought from Egypt unquestionably formed the basis of their medical science and practice. And as there was afterward much communication between Egypt and Palestine, the latter country doubtless participated in the improvements made in the former, although we are not disposed to contend that the medical science among the Hebrews ever attained the state which it reached among the Egyptians. The principal mode adopted by the Egyptians for preventing illness was attention to regimen and diet. Being persuaded that the majority of diseases proceed from indigestion and excess of eating, they had frequent recourse to abstinence, emetics, slight doses of medicine, and other simple means of relieving the system, which some persons were in the habit of repeating every two or three days. And Herodotus mentions that in what he calls "the corn country" of Egypt, the inhabitants submitted to a regular course of medicine during three successive days every month.

The employment of numerous drugs in Egypt has been mentioned by sacred and profane writers; and the medicinal properties of many herbs which grow in the deserts, particularly between the Nile and the Red sea, are still known to the Arabs; although their application has been but imperfectly recorded and preserved. "O virgin daughter of Egypt," says Jeremiah, "in vain shalt thou use many medicines, for thou shalt not be cured!" Homer, in the *Odyssey*, describes the many valuable medicines given by Polydamna, the wife of Thonis, to Helen while in Egypt, "a country whose fertile soil produces an infinity of drugs, some salutary and some pernicious; where each physician possesses knowledge above all other men;" and Pliny makes frequent mention of the productions of that country and their use in medicine. The same writer mentions that the Egyptians examined the bodies after death, to ascertain the nature of the diseases of which they died. And although his mention of the subject will not suffice to warrant the antiquity of the practice, there is much reason to conclude that the uses of dissection and the discoveries it promised, would be suggested early to a people who opened and treated the bodies of the dead with a view to the purposes of embalment. In such operations appearances must frequently have been noticed, which could not but indicate the cause to which the death of the party might be traced.

It is evident that the medical skill of the Egyptians was well known even in foreign and distant countries; and we learn from Herodotus that Cyrus and Darius both sent to Egypt for medical men. But although their physicians are so often mentioned by Herodotus and other medical writers, the only indications of medical attendance occurs in the paintings of Beni-Hassan, where a doctor and a patient are twice represented.

It illustrates the spirit of the times, however, and corroborates our observations to note that, even under this considerably advanced state of medical practice, there was much superstition mingled with it or joined to it. The dreams of the devout were thought to be often rewarded by the gods with an indication of the

remedies their sufferings required; but this and magic were only a last resource, when the skill of the physician had been baffled, and all hopes of their recovery had been lost; and a similar superstitious feeling induced them to offer *ex votos* in their temples for the same purpose.

According to Pliny, the Egyptians claimed the honor of having invented the art of curing diseases. By which we are, of course, to understand that they claimed to have digested into an art the rules of healing which experience had accumulated. And to this claim the Bible affords some sanction by the fact that its first notice of physicians is to intimate their existence in Egypt, as early as the time of Joseph; and the other early allusions to physicians are made by those who knew Egypt well.

We think it clearly impossible, under all the circumstances of their position, but that the Israelites must have derived much benefit from the progress in medical science made by the Egyptians; but it must be admitted that the few intimations which the Scriptures offer do not enable us to estimate very precisely the extent of that benefit. Some acquaintance with surgical operations is implied in the rite of circumcision. There is ample evidence that the Hebrews had some acquaintance with the internal structure of the human system, although it does not appear that dissections were ever made *by them*. That physicians sometimes undertook to exercise their skill in the removal of diseases of an internal nature is evinced by the circumstance of David's playing upon the harp, to relieve the malady of Saul. The art of healing was intrusted by the Hebrews, as it was by the Egyptians, to the priests; and, by a law of the state, the Hebrew priests were obliged to take cognizance of leprosy. Reference is also made to physicians who were not priests, and to instances of sickness, disease, healing, etc.

The balsam or balm, was particularly celebrated as a medicine. That mineral baths were deemed worthy of notice may be inferred from Gen. xxxvi. 22; and their appreciation in later times is evinced by various intimations in Josephus, as well as by the ruined constructions at the baths of Tiberias, of the Hieromax, and of the Arnon. About the time of Christ the Jewish physicians advanced in science and increased in numbers. Many superstitious practices still however prevailed, arising probably from the fact (of which there are various examples in the Gospels) that it was usual to attribute to evil spirits the more grievous diseases, especially those in which either the body was distorted or the mind disturbed and tossed with phrensy. In many cases like the old Egyptian physicians, they began and persevered in treating a disease as such, but ended in pronouncing it an evil spirit, and then proceeded to deal with it by peculiar rites and exorcisms. Hence their medical precepts, after enumerating the medical alternatives of treatment, conclude with pointing out the superstitious rites and operations which are proper, in the given case, to be resorted to in the last instance. It appears, from the Talmud, that the Hebrew physicians were accustomed to salute the sick by saying, "Arise from thy disease!" This

salutation, in a form somewhat more imperative and commanding had full effect in the mouth of Jesus. According to the Jerusalem Talmud, a man was considered to be in a state of convalescence when he began to take his usual food.

The modern medical science or rather practice of the East is not very different from that which has here been described, and certainly is not in a more advanced state. From the length to which this article has extended, we must abstain from this part of the subject, and confine ourselves to the remark that it is very usual among the Moslems in case of illness to neglect medical aid altogether, placing their whole reliance upon Providence, or upon charms.

TIDES OF THE OCEAN.

ALL the elements in nature having unquestionably an influence on each other (or for what other purpose are they created ?) it follows that water will be affected by air, as *by experiments* has often been exhibited; and the bubbles that rise to the surface of ponds in hot weather, are formed by the effect of air drawn out by rarefaction of the atmosphere, and to preserve the equilibrium. Air is in like manner impregnated with fire, or the electric fluid; and those purer elements that amalgamate and fill the ethereal space, act upon the atmospheres of all planetary bodies, and, by reaction from one to another, according as the motions of those bodies give them activity. Whatever, therefore, any planetary body may have to do with the phenomenon of the tides of the ocean, must be through the agency of those communicative elements, and directly through the earth's atmosphere; consequently, the air is the immediate and relative cause of the elevation or swelling of the ocean, which rises up to replenish a *vacuum*, that the exit of imperceptible elements has left in the circumambient air. It is a sort of general effect, like that which causes exhalation or absorption; but instead of small particles of water being conducted high in the air, through capillary interstices of indefinitely refined elements, the whole mass is mounted upward, and of course, floats off like an aquatic body on an inclined plane, seeking a level; by which creeks are filled, and rivers arrested and turned back toward their sources. This effect has rather erroneously been called attraction, but, as has been before observed, it really means gravitation. It is part of that universal and endless effort of nature to perfect an equilibrium, which never can be, while congregated matter in millions of orbs, continues to float in ether, launched forth by the Almighty Hand that made them. These can find no centre, as universe has no circumference, and therefore, can never be at rest; hence will the elements continue to act upon each other, and upon concrete substances, so long as these bodies keep their motions and thereby move and agitate them. It is from the sun, at the centre of our system, that all the planets receive their influences; and all the effect our moon can have on the waters of the globe is by a secondary power, derived from

that great governing luminary: but that it has an effect in augmenting the tides, though of a minor kind, circumstances and coincidences are too strong to leave it doubtful. Those tides most affected by the moon are called spring tides, from their springing or rising higher than the neap tides. These spring tides occur at the full moon, or at the new moon, when that orb is geocentrically either in opposition or conjunction with the sun, and when the primary influence of the latter is aided by the secondary influence of the former.

But there is another cause, distinct from the effect of those elements, that the sun agitates or that the moon reflects; and this is the diurnal motion of the earth herself, which must and certainly does cause a flux of the sea, inclining from east to west, her rotative motion being continually eastward, toward which her solid parts will proceed without expansion, while the greater elasticity of the ocean causes it to give way to the impulse, and become rolled, by resistance of the medium through which it has to pass, into an aquatic ridge, which must subside into small seas, bays, creeks, &c., and cause an increase of their depths; till, having passed them, the redundancy of water again returns to the ocean. This theory is corroborated by the circumstance of the tides being later in their return each succeeding day than the former; which is exactly the case, when any machine, with water on its surface, is rapidly turned round; a small ridge of water may be observed, that will not move so fast as the surface on which it is placed, and, consequently, seeks to run off to a level; but this, though a simile, is not a complete illustration of the effect. Tides of the ocean are, however, caused by those central revolutions, but their increase and decrease by other agencies, such as the effects of the elements affected by the sun, or reflected by the moon, the course and strength of winds, &c., and the intervention and obstructions of land, islands, &c.; and this is the reason why small seas have small tides, and some of them none at all; and also why the western shores of large continents are almost strangers to them, because they are propelled westward; or, rather, the water is retarded from accompanying the eastward diurnal revolution of the globe, and so seems to go westward. The effect of elements on the tides, which are influenced by the sun and moon, in a major degree by the former, is when, as before observed, they have a united effect, and both contribute to that elementary vacuity of the earth's atmosphere, which causes a lifting up of the waters, or a swelling of them, by reason of withdrawing some of the superincumbent elements of the atmosphere. The bodies themselves of the sun and moon do not interfere; it is the elements that those bodies affect by their magnitudes and motions. The high tides are either when the sun is on the meridian of our longitude, or that of the opposite hemisphere. As to the times of high water, the calculation is made by the moon's age, they being about fifty-one minutes later every day, but not regularly, as many circumstances will accelerate or retard the flowing and ebbing of the tides.



Oriental State Dinner.

EGYPTIAN EATING.

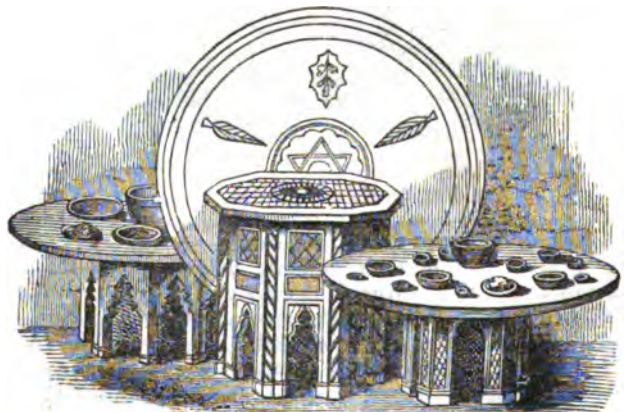
THE usages of the Egyptians in the matter of eating, as collected from the examination of the representations which occur in the painted tombs, throw considerable light on many passages of the early Hebrew history and law. And this not only on those passages which afford distinct allusions to Egyptian customs, but from the indications which are offered, that many of them were adopted by the Hebrews; and not only by analogy, but by antagonism; for there is no doubt that many of the regulations on this subject, which are contained in the law of Moses, are designedly levelled at Egyptian usages in eating, which were not considered suitable for the Hebrew people. We shall, therefore, collect from Mr. Wilkinson's large and very interesting statement on the subject such particulars as seem of the most importance.



Egyptian Stewards.

An Egyptian dinner consisted of a considerable number of dishes, and the meat was killed for the occasion, as at the present day in eastern and tropical climates. If it was an entertainment to which guests were invited, they were in the interval amused with music and the dance, or passed the time in conversation.

In the meantime, the kitchen presented an animated scene; and the cook, with many assistants, was engaged in making ready the dinner. An ox, kid, wild goat, gazelle, or oryx, and a quantity of geese, ducks, widgeons, quails, or other birds, were obtained for the occasion. Pork was not eaten; and the use of mutton for the table is never indicated, and this confirms the testimony of Plutarch, who tells us that the flesh of the sheep was used for food in only one of the Egyptian nomes. Beef and goose constituted the principal part of the animal food throughout Egypt; but the flesh of the cow was never eaten.



Modern Oriental Table.

That a considerable quantity of meat was served up at those repasts to which strangers were invited, is evident from the sculptures, and agreeable to the customs of eastern nations, whose *azooma*, or feast, prides itself upon the quantity and variety of dishes, in the unsparing profusion of viands, and, wherever wine is permitted, in the freedom of the bowl. An endless succession of vegetables was also required on all occasions, and, when dining in private, dishes of that kind were in greater request than joints, even at the tables of the rich. We are therefore not surprised to find the Israelites, who, by their long residence there, had acquired similar habits, regretting them equally with the meat and fish which they "did eat in Egypt freely;" and the advantages of a leguminous diet are still acknowledged by the inhabitants of modern Egypt. This, in a hot climate, is far more conducive to health than the constant introduction of meat, which is principally used as a flavor to the vegetables cooked with it; and if, at an eastern feast a greater quantity of meat is introduced, the object is rather to do honor to the guests, who, in most countries, and in all ages, have been welcomed by an encouragement of excess, and a display of such things as show a desire on the part of the host to spare no expense in the entertainment. The same custom prevailed with the ancient Egyptians; and their mode of eating was very similar to that now adopted at Cairo, and throughout the East; each person sitting round a table, and dipping his hand into a dish placed in the centre, removed on a sign made by the host, and succeeded by others whose rotation depends on established rule, and whose number is pre-determined, according to the size of the party or the quality of the guests.



Egyptian Culinary Vessels

Among the lower orders, vegetables constituted a very great part of their ordinary food; and they gladly availed themselves of the variety and abundance of the esculent roots growing spontaneously on the lands irrigated by the rising Nile, as soon as its waters had subsided; some of which were eaten in a crude state, and others roasted in the ashes, boiled,

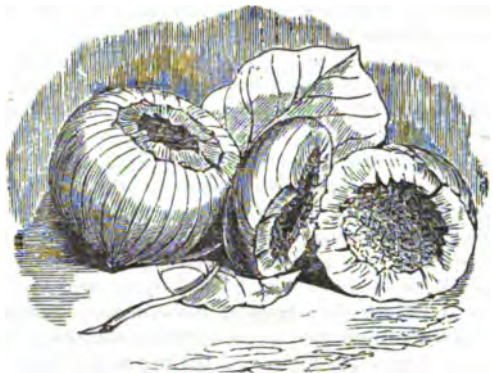
or stewed; their chief aliment consisting of milk and cheese, roots, leguminous, cucurbitaceous, and other plants, and ordinary fruits of the country. Among these vegetables there is one which requires particular observation. This is the onion, which, Juvenal says, the Egyptians were forbidden to eat; but Plutarch restricts this abstinence to the sacerdotal order. That onions were cultivated in Egypt is proved by the authority of many writers, as well as from the sculptures. Their quality was renowned, both in ancient and modern times; and the Israelites, when they left the country, regretted "the onions," as well as the cucumbers, the melons, the leeks, the garlic, and the meat, which they "did eat" in Egypt. The sculptures frequently represent the priests as laying bundles of onions upon the altars for offerings. They were also introduced at private as well as public festivals, and brought to table with gourds, cucumbers, and other vegetables. The onions of Egypt were mild, and of an excellent flavor, and were eaten raw, as well as cooked, by persons both of the higher and lower classes.

In slaughtering for the table, it was customary to take the ox, or whatever animal had been chosen for the occasion, into a court-yard near the house, to tie its four legs together, and then to throw it upon the ground, in which position it was held by one or more persons, while the butcher, sharpening his broad knife upon a steel attached to his apron, proceeded to cut the throat, as nearly as possible, from one ear to the other, sometimes continuing the incision downward along the throat. This is the manner in which animals are still slaughtered throughout Western Asia; and, no doubt, generally among the ancient Hebrews; for we suppose the striking off of the animal's head at once, as described in the ceremonies for the expiation of an uncertain murder, had a significant reference to the particular occasion, and was not used in slaughter for the table. Among the Egyptians the blood was frequently received into a basin, for the purposes of cookery. This was repeatedly forbidden to the Israelites by the law of Moses; and the reason for the urgency of the prohibition is found in the necessity of preventing them from adopting a custom which they had constantly witnessed, or rather, probably, from continuing one which they had practised, in Egypt. Nor is this custom less strictly denounced by the Mohammeidan religion; and all Moslems look upon this ancient Egyptian and modern European custom with unqualified horror and disgust.

After this the head was taken off, and the animal skinned, commencing with the leg and neck. The first joint removed was the right fore-leg or shoulder, whether for the table or the altar; and it is remarkable that this first-separated joint is that which, under the law of Moses, became the due of the priest in all peace-offerings. The other parts followed in succession, according to custom or convenience. Servants carried the joints to the kitchen on wooden trays, and the cook, having selected the parts suited for boiling, roasting, and other modes of dressing, prepared them for the fire by washing, and any other preliminary process he thought necessary. In large



Ancient Romans at Meat.



Sycamore Figs.

kitchens the head-cook had several persons under him, who were required to make ready and boil the water of the caldron to put the joints on spits or skewers, to cut up or mince the meat, to prepare the vegetables, and to fulfil various other duties assigned them.

The mode of cutting up the meat was so different from ours as sometimes to prevent our recognising the exact part which the sculptures intend to represent.

The same mode of slaughtering and preparing the joints extended to all the larger animals; but geese, and other wild and tame fowl, were served up entire, or at least only deprived of their feet and pinion joints. Fish were also brought to table whole, whether boiled or fried, save that the tails and fins were removed.

We can not follow our authority into the details of the cooking operations; but must return to the party which we left waiting for their dinner. Sherbets and other light refreshments were handed round to the assembled guests, while the meal was in preparation. Mr. Wilkinson says "wine," and we dissent with extreme diffidence; but, from the large size of the vessel which is offered, and from other circumstances, we judge that the before-dinner beverage was not wine, but some pleasant acidulated drink or sherbet, such as the dreams which Joseph interpreted in prison, seem to represent the king himself as taking before dinner.

Dinner was served up at noon; but it is likely that the Egyptians, like the ancient Romans and modern Orientals, and, indeed in some instance like ourselves, for our late "dinner" is such, had a full supper in the evening. The table, as shown in the cut, was very similar to that still used in Egypt and Western Asia, being a small stool supporting a round tray on which the dishes were placed, together with loaves of bread, some of which were apparently not unlike those of the present day, flat and round, as our crumpets, and others in the form of rolls or cakes sprinkled with seeds. Occasionally each guest had a table to himself.

The tables, as at a Roman repast, were occasionally

brought in and removed with the dishes on them, sometimes each joint, was served up separately, and the fruit, deposited in a plate or trencher, succeeded the meat at the close of the dinner; and in less fashionable circles, particularly of the olden time, it was brought in baskets, which stood beside or under the table. The Egyptians, like the Jews, were particularly fond of figs and grapes. The sycamore fig was highly esteemed. Fresh dates during their season, and in a dried state at other periods of the year, were also brought to table, as well as a preserve of the fruit still common in Egypt and Arabia.

The guests sat on the ground, or on stools or chairs; and, having neither knives nor forks, nor any substitute for them, they ate with their fingers like the modern Asiatics, and, like them, invariably with the right hand. Spoons were introduced when soups or other liquids required their use, and perhaps even a knife was employed on some occasions to facilitate the carving of a large joint, which is sometimes done in the East at the present day.

THE OCCULT SCIENCES.

HOWEVER attractive the title of the present article might have proved two or three centuries ago, an historical point of view is the only one in which it is likely to interest readers of our own times. True science derives no support from mystery, and so far from having anything occult in her objects or proceedings, she proclaims her views far and wide, and rejoices and prospers in proportion to the numbers and free intercommunication of her votaries. It is true that she has her difficulties, but then she frankly confesses them, well knowing that the first step toward the removal of obstacles to her progress is the free recognition of their existence.

The so-called occult sciences had for their object the supernaturally influencing present and predicting future events. The labors and proceedings of the magician, the astrologer, and the alchymist have all had one or other of these ends more or less in view

The belief in magic and divination seems to have prevailed in all ages and in all countries, both in those to which we are accustomed to look back as the originators of ancient civilization, and others plunged in the grossest barbarism and darkness.

Allusions to the practices of magic or divination abound in the Scriptures: the Jews, ever after their captivity in Egypt, seem to have become addicted to them, and were frequently and expressly forbidden to engage in proceedings which with them formed but a branch of that idolatry to which they were so obstinately prone. The Jewish Cabala is referred back to a very remote antiquity, but it was seen only in all its varieties during the middle ages, reflecting the religious mysteries of Rabbinism. Cabala signifies tradition, and in its origin would seem to have been purely religious—a kind of secret theology endeavoring to explain the mysterious sense of the sacred writings; but prior to the middle ages it had become the imaginary vehicle for communicating with the beings of another world. It was divided into two sections, one treating of the occult virtues concealed in the world, and the other of supernatural knowledge. An inferior description of Cabala consisted in the combination of certain mysterious words, termed cabalistic words, which, carried about the person, afforded protection from demons, sickness, &c.; the famous combination *Abracadabra* acquired an immense reputation. Among the primitive Christians, and long since among the illiterate vulgar, texts of the New Testament were in like manner supposed to be of great efficacy in the recovery of the sick, &c.; the first two or three verses of the Gospel of St. John were especially esteemed for this purpose. The same cabalistic signs which could thus at one time avert disease and mischief, were employed under other circumstances to invoke demoniacal agency, and work evil miraculously. In like manner the disposition of certain numbers has been considered as a principle involving the most wonderful power over futurity. The Hindoos, Egyptians, and Chinese, and the Europeans of the middle ages, have all entertained the highest opinion of the energy of magic squares and other cabalistic figures. The Greeks placed implicit faith in divination, so that, in the early period of their history, every action of importance was determined upon only after the observation of the flight of birds, the inspection of their entrails, of sacrifices, &c. At a later period they consulted oracles, whom they believed to be the direct interpreters of the wills of their deities. The oracle of Apollo at Delphi acquired, by the skill and duplicity with which the responses were framed, an immense and durable reputation. The Romans practised augury most extensively; at one time it formed a part of the regular system of instruction of their principal youth, some of whom were by a decree of the senate sent to each of the states of Etruria to be instructed in the art. The augurs, originally taken exclusively from the patrician class, but afterward partially from the plebeian, were formed into a college, and held in the highest estimation; they possessed many privileges, and could not be deprived of their offices, however great the crimes they

may have committed. Their omens were derived from the appearance of the heavens, the singing and flight of birds, the feeding of chickens, the examination of the entrails of victims, drawing lots, &c., &c. Some of these were of a very ridiculous nature. It is remarkable that many of the profoundest observers of antiquity believed in this power of predicting the future: but it must be recollected that among the ancients divination was associated more or less with the solemnities and mysteries of their religion. Nevertheless Cato expresses his surprise that the soothsayers could keep their countenances while consulting their omens.

A fertile period of modern sorcery occurred when the northern tribes inundated and devastated the southern regions of Europe. The various nations of Huns, Goths, Allemanns, &c., all brought their traditions of magicians, sorcerers, &c., differing from each other; while those whom they conquered in their progress, oftentimes concealing themselves in the forests and caves, furnished yet further materials for legends of concealed dwarfs, sorcerers, &c. This was the case with the Finnish tribes overrun by the Swedes and Danes. Although the Celtic mythology yielded to the influence of Christianity, yet did it leave as a legacy its magicians and other supernatural beings. Thus we have the enchanter Merlin introduced with the fables of King Arthur, and his renown has survived every change, and reached our own times, both in that country and in France. After the Crusades, the Europeans mingled with the sterner ideas of the North, the brilliant fairy land of the Arabs and Persians; and from this source are derived many of our legends. The occupation of Spain by the Moors must have given great encouragement to the study of the occult sciences, they were at that time the best instructed people in Europe, and much addicted to this description of pursuits. The Jews also (to whose cultivation of these studies we have already alluded), by reason of their wandering habits, must often have become a medium of communication of the knowledge of the East to the West. During the sixteenth and seventeenth centuries, the belief in sorcery prevailed over entire Europe, and frequently gave rise to the most cruel persecutions. Professed in the persons of the charlatan, or the disordered and weakened intellect, it had lost that solemn and important character which its connexion with religious observances had invested it with in times of antiquity, and has gradually disappeared before the light of increasing civilization.

It is humiliating to recall to mind how short is the period since the belief in witchcraft was all but universal; and the cruel persecutions instituted for its suppression form one of the too numerous dark spots in modern European history. It would be idle here to enter upon the discussion concerning the identity of the witches mentioned in Scripture, and those unfortunate beings who have been distinguished by the appellation in more recent times. Suffice it to say that texts intended for special and temporary application have been seized hold of as justifying a cruel and sanguinary persecution, originating in the gross

est folly and credulity, and directed for the most part against aged, feeble, and half-witted women, who, in many instances, by the torments they endured, and the general persuasion of those around them, were brought to confess to a communing with the evil one, and the derivation thence of a power injurious to society. Some of the earliest accusations of this crime were, however, directed against different subjects, and veiled under the pretext of different objects : thus political enemies and heretical believers were frequently denounced as guilty of witchcraft. Who has not felt indignant at the mean vindictive charge of witchcraft brought by our ancestors against the noble and heroic Maid of Orleans ? It is true that Joan of Arc believed herself inspired to the delivery of her country, when during her prayer for aid she believed she heard a celestial voice exclaiming : " Va, va, je seray à ton aide, va ! " The accusation against the wife of the good Duke Humphrey of Gloucester for the same crime, as also those numerous ones invented by Richard III., must be familiar to all readers of English history. In different parts of Europe commissions of inquisition were appointed to search for and destroy all those who practised witchcraft ; and it is from the statement of some of these inquisitors we learn the dreadful extent to which their cruelties were often carried. Pope Innocent VIII. issued a bull, deploring the increase of witches, and exhorting the inquisitors to more alacrity in their dreadful functions. The consequence was a bloody persecution spread over France, Italy, and Germany.

About 1485, Cumanus burned forty-one poor women in one year ; and about the same period another inquisitor burned a hundred persons in Piedmont. In 1515 five hundred persons were executed at Geneva as " Protestant witches ; " and Remigius, the inquisitor in Lorraine, boasts that in fifteen years he put to death nine hundred persons. In 1524 a thousand persons are said to have thus perished in Como. Witchcraft was made a frequent pretext for the persecution of the Albigenses in France, and that country continued the scene of the most cruel proceedings, until an edict of Louis XIV. forbidding further proceedings on account of the crime, was the cause of its entire disappearance. So true is it that cruel persecution multiplies rather than diminishes the crime it is directed against. In Spain the Inquisition was most active in its proceedings against sorcery ; while in Sweden, in 1669, according to Dr. Horneck, more than fourscore persons lost their lives on the accusation of witchcraft, the only evidence against them being the reports of children.

Britain has unfortunately kept pace with other countries in these barbarous proceedings. Prior to the reign of Elizabeth, condemnations had occurred for witchcraft, or rather for political offences with which this was said to be mingled ; but in 1558 we find Bishop Jewel thus addressing her : " It may please your Grace to understand that witches and sorcerers within the last four years are marvellously increased within your Grace's realm. Your Grace's subjects pine away even to the death, their color faded, their flesh rotteth, their speech is benumbed,

their senses are bereft. I pray God they never practise further than the subject."

Statutes were passed against sorcery and witchcraft ; but, with some exceptions, the punishments resulting were neither severe nor frequent during the queen's reign. Far otherwise in that of her successor. The pedantic James had, even before his accession to the English throne, published a work upon the subject ; and thus his fears of personal injury resulting to himself from the diabolical agency of witchcraft, and his vanity as an author, instigated him to an active investigation of the subject. He published a new edition of his " *Dæmonologie*," in 1603. In it he deplores the manifold increase of the crime ; enters into an elaborate disquisition concerning its varieties, its detection, and punishment, adopting with implicit faith all the gross delusions and glaring absurdities current among the mass of the people. The book is written in the form of a dialogue. After death having been denounced, the question is asked, " But ought no sexe, age, or rank to be exempted ? None at all ; for it is the highest point of idolatry, wherein no exception is admitted by the law of God." Speaking of the proofs of witchcraft, he says, " And besides there are two other good helps that may be used for their triall : the one is the finding of their marke, and the trying the insensibleness thereof. The other is their fleeing in the water ; for, as in a secret murder, if the dead carcase be at any time handled thereafter by the murtherer, it will gush out of blood, as if the blood were crying to heaven for revenge of the murtherer, God having appoynted the secret supernaturall signe for tryall of that secret unnaturall crime ; so it appears that God hath appoynted that the water shall refuse to receive them in her bosome that have shaken off them the sacred water of baptisme, and wilfully refused the benefite thereof. No, not so much as their eies are able to shead teares (threaten and torture them as you please), while first they repent, albeit the women kinde especially be able otherwaies to shead teares at every light occasion, when they will, yea, although it were dissemblingly like the crocodiles." Numerous other writers supported the views of the monarch, and at that epoch Reginald Scott was the only writer in the country who courageously combated the popular delusions : and in his " *Discoverie of Witchcraft* " fully exposed the utter absurdity of attributing this evil practice to these miserable victims of persecution, and the cruelty of the means employed for their condemnation. His book was burned by the order of James, who also stigmatized the author in the preface to his " *Dæmonologie*." Indeed, it required no little moral courage in those days to take the part which Scott did, as all the early writers against the existence of witchcraft were looked upon as atheists. The statute of James declared witchcraft felony without benefit of clergy, and several individuals perished in consequence. But it was during the civil wars, upon the predominance of the Presbyterian party, that the greatest cruelties were practised against witches both in England and Scotland. Wretches under the name of witch-finders were encouraged to traverse all parts of the country in quest

of these victims of ignorance and credulity. Evidence of the slightest, and often of the most absurd description, was received as all-sufficient; nay, the mere surmise of an ill-affected neighbor, or the occurrence of some calamity in her neighborhood, has hurried many a poor old woman to the stake. The witch-finder was permitted to submit the suspected person to various cruel trials or tests, out of which it was scarcely possible she should come unscathed, seeing that the pain she suffered often extorted confession (for what will torture not extort?); and when this was not the case, the by-standers almost always drew unfavorable conclusions from the mode in which she went through her trials. A brutal fellow, named Matthew Hopkins, acquired an immense reputation as a witch-finder; and in 1647 published a pamphlet detailing the means he employed.

After the restoration of Charles II., these cruelties were but rarely practised, yet the statute of James I., which sanctioned them, was not repealed until the 9th of George II. One of the most extraordinary events which has been recorded in connexion with popular delusions occurred in New England, when the colonists themselves fleeing from oppressions at home, commenced, in 1692, a most furious and unaccountable persecution against persons accused of witchcraft. Individuals of all conditions and ages became involved in the proscription, and those who did not save themselves by speedy flight were executed; young children suffered, and even a dog was among the condemned. This phrensy disappeared as suddenly as it had commenced; many of the judges and jurors who had taken part in the horrid scenes publishing their penitence for the rashness of their conduct.

Alchemy, or the imaginary art of converting the baser metals into gold and silver, is supposed, as the prefix *al* would seem to denote, to have been of Arabic origin. The means by which this transmutation was effected, was the substance termed the philosopher's stone—the grand object of the research and manipulations of the chymical philosophers of the middle ages. The possibility of its discovery was implicitly believed by even some of the greatest geniuses of the time, while its actual possession was boasted of by others of more doubtful reputation. It was a sorry circumstance that the possessor of this source of unlimited riches was but too often clothed in rags, and a mendicant for the necessities of life; so that with good reason the Italian proverb says, "Non ti fidare al alchymista povero o medico amalo" (Do not place your trust in a poor alchemist or a sick physician). In the thirteenth century alchemy was in a most flourishing condition, enumerating among its professors the names of Roger Bacon, Raymond Lully, and Albertus Magnus. Another object of research was the elixir of life, or universal medicine for the cure of all diseases and the prolongation of life beyond its natural limits. "That medicine," says Friar Bacon, "which could remove all impurities of the baser metals, and change them into the finest gold and silver, could also remove all the corruptions of the human body, to such a degree that life might be prolonged through many ages." There

arose in Germany a religious sect about the fourteenth century, which, by the distortion of certain passages of Scripture, gave them an alchymical application; and constituted itself into an order of the Rosie Cross (four red roses arranged in a cross being its sign), and has since attracted much attention in Europe under the appellation of Rosicrucians.

We have mentioned that many learned men of these comparatively dark periods were firm believers in the truths of alchemy, and passed great portions of their lives in the laborious studies and practices its study entailed. Besides Bacon and others, who, contemporaries of the delusion, were the more likely to be led astray by its promises, others in more recent times have professed their partial or entire belief in the narrations handed down to us; this is the case with Descartes, Bergmann, and Van Helmont. The latter says: "I am constrained to believe in the making of gold and silver, though I know many exquisite chymists to have consumed their own and other men's goods in search of this mystery; and to this day we see these unworthy and simple laborers cunningly deluded by a diabolical crew of gold-and-silver-sucking flies and leeches. But I know that many will contradict this truth; one says it is the work of the devil, and another that the sauce is dearer than the meat." Helvetius published a detailed account of a transmutation he himself witnessed, performed at his house by a stranger of "plebeick habit, honest gravity, and serious authority." He calls his book "The Brief of the Golden Calf: discovering the rarest miracle of nature, how by the smallest portion of the Philosopher's Stone a great piece of common Lead was totally transmuted into the purest transplendent Gold, at the Hague in 1666."

Holding out such brilliant promises, the alchemists could not want protectors and patrons, and accordingly we find various sovereigns taking the greatest interest in their proceedings, nay, becoming operators themselves. This was the case with Pope John XXII., at whose death were found eighteen million florins in gold, and seven million in precious stones; while he declares, in his work upon the subject, that he had made two hundred ingots of gold, each weighing a hundred pounds. In England, two of their greatest kings, Edward I. and III., were great believers and patrons, and Raymond Lully is said to have furnished Edward I. with a great quantity of gold. In 1329 Edward III. issued the following curious proclamation: "Know all men that we have been assured that John Rows and William de Dalby know how to make silver by the art of alchemy; that they have made it in former times, and still continue to make it; and considering that these men, by their art, and by making that precious metal, may be profitable to us and to our kingdom, we have commanded our well-beloved Thomas Carey to apprehend the aforesaid John and William, wherever they can be found, and bring them to us, together with all the instruments of their art."

Alchemy was also much encouraged by Henry VI. In his reign many protections were given to alchemists, to secure them from the penalties of an act of parliament passed in 1403, and from the fury of the

people, who believed them to be aided by infernal spirits. After a long preamble, stating the advantages and probabilities of success attendant upon the researches of the alchemists, one of these protections thus continues: "We, therefore, confiding in the fidelity, circumspection, and profound learning, and extraordinary skill in the natural sciences, of these famous men, John Faucely, John Kirkeley, and John Rayney, elect, assign, nominate, and license, all and each of them, and of our certain knowledge, and by our authority and prerogative royal, we, by these presents, grant to all and each of them, liberty, warrant, power, and authority, to inquire, investigate, begin, prosecute, and perfect, the aforesaid medicine, according to their own discretion and the precepts of ancient sages, as also to transubstantiate other metals into true gold and silver, the above statute or any other statute to the contrary notwithstanding. Further we hereby take the said John, John, and John, with all their servants and assistants, into our special tuition and protection." This commission was confirmed by the parliament in 1456.

Although many of the alchemists were the honest dupes of their own imaginations, yet others were rank impostors and charlatans; and the advancement of modern chymical knowledge has brought to light many of the tricks and stratagems (several very ingenious in their contrivance) they had recourse to in order to deceive. Occasionally, however, they were hardly dealt with, for various princes and nobles, whose cupidity was excited by their representations, imprisoned and tortured them in order to make them multiply gold or furnish the valuable powder for so doing. With how little success need not be mentioned.

The evil which has resulted from the pursuit of these "occult sciences" has not been entirely un-mixed. Discoveries in astronomy have resulted from the observations of the astrologers; from the search for the philosopher's stone has resulted also the discovery of many valuable chymical compounds and the inventions of much useful apparatus; while more than one useful medicine has been introduced by those who were searching for an imaginary elixir. But it must be remembered, that any good which may have thus sprung from these researches is merely accidental, and that we can not but congratulate ourselves that in our own day the attention, abilities, and time of philosophers, are turned to objects less alluring to the imagination, but infinitely more certain in results. But we must not flatter ourselves that belief in these matters is merely a matter of history. M. Denis states (in an excellent article in the "*France Littéraire*," to which we have referred in preparing this paper), that so late as 1826, a woman was burned at Dax for witchcraft, while about the same period a venerable prelate was denied burial at Spire, because public report accused him of magic. In our own country and our own day, have we not seen multitudes pinning their faith to a new weather-prophet, and a city company employing a philosopher of no mean reputation to prepare astrological predictions. Is not a "wise man" still often consulted by our peasantry in rural

districts? Is not the horse-shoe still nailed up as a protection against the power of witches? Are not amulets still worn, and how many people are there yet who will never commence any undertaking of the least importance on a Friday? "These things prove," says M. Denis, "how much the minds of the people yet require to be enlightened, and what a bad effect the hawking books of fortune-telling and witchcraft produces in the provinces. Of all the means we can employ to remedy this state of things, the proper instruction of the lower orders is the most efficacious; elementary instruction in physics and physiology would indeed do much."

Judicial astrology, or the art of foretelling future events by the inspection of the stars, seems to have been practised from very remote antiquity. It is generally supposed to have originated with the Chaldeans, and to have been thence transmitted to the Egyptians, Greeks, and Romans. The Jews, after their captivity, became much addicted to it; while the Romans, after they had conquered Egypt, conceived so passionate a love for the science of astrology, as to defy all the edicts of the senate issued against its professors. Neither astrology nor astronomy seemed to have been known to the northern nations of Europe until introduced to its acquaintance by the Moors of Spain and the Crusaders. The Mohammedans have always been great astrologers. Once introduced into Europe, the study of and belief in the science spread rapidly and extensively, not merely among the illiterate and vulgar, but among some of the brightest spirits of their respective periods, who indeed usually pursued the study of astronomy only inasmuch as it was subservient to the purposes of astrology. No important events were undertaken without consulting the astrologers, and their predictions were looked to with hope or fear as the case might be, but never with doubt. Thus Catherine de Medici is said to have always consulted astrologers before any important undertaking; and at one time there was scarcely a prince or even great baron in Europe who did not keep an astrologer in his retinue to cast the horoscopes of his children and foretell future events. The predictions of the astrologers were for the most part couched in artful and general terms, and when they ventured to be too precise, they brought sometimes great discredit on their art; thus, in 1816, all the great astrologers of Christendom agreed that on the 18th of September of that year a most dreadful storm would sweep away whole cities, and would be followed by pestilence and wars of a most destructive character. The Moorish astrologers of Spain, however, disputed the accuracy of the prediction. Baldwin, Archbishop of Canterbury, ordered a solemn fast for three days in order to prepare for the calamity. All Europe was in consternation; but on the arrival of the much dreaded day, it proved unusually serene and calm, and the season which followed was mild and healthy; and there were no storms all that year (says Gervase of Canterbury), but what the archbishop raised in the church by his own turbulence. Friar Bacon was a great adept and believer in astrology, and imputed the various calamities which befell Europe in 1264

to the neglect of its predictions. He says, "Oh, how happy had it been for the church of God, and how many mischiefs would it have prevented, if the aspect and qualities of the heavenly bodies had been predicted by learned men, and known to the princes and prelates of those times! There would not have been so great a slaughter of Christians, nor would so many miserable souls have been sent to hell." Even down to the beginning and middle of the seventeenth century, almost numberless works upon the subject of astrology, some of them requiring great industry and patience for their production, continued to appear, although the influence they exerted became chiefly confined to the lower classes of the community.

STUDY ON THE FARM.

MORE exercises of the mind in observing and reflecting upon the course of nature, and the processes of cultivation, would be of vast benefit to most farmers and to their sons. Some few among them do pass over their grounds and along the roads with their eyes open. They notice the adaptation of different crops to the different soils; they observe the effects of the different processes of cultivation. Such farmers find work for the mind as well as the body; they thus keep themselves bright and contented. The tediousness of hard labor is lessened by the activity of the mind. Nor is the good result confined to themselves alone: their sons and their laborers catch the same spirit of observation and reflection (if they have been created capable of such things), and thus they become intelligent and more efficient laborers. The sons are more contented with home and with the work upon the farm.

Where the various crops in the field are made matters of study, they possess an interest and a value distinct from the amount of money they may bring in. They become one's teachers; they give him lessons to be treasured up and to be used. And it is those only who seek to learn and to profit by these lessons, which are furnished by the growing corn and potatoes and fruits of various kinds, who really are intelligent and exemplary farmers. A few, by dint of unwearied toil from year to year, and by a soul-pinching parsimony, may get money; and this too, without observing any lessons, excepting a few brief ones which were inculcated by others while they were young. But those who stick to the old way in everything, through thick and thin, and for no other reason than *because it is the old way*, are not men and are not good farmers; they are little more than brute laborers, who by dint of perseverance get some money, but get little else that is worth having. We are not ridiculing the old way, but are only saying that they should be compared with new ones, before one can with any propriety maintain that they certainly must be the best. That the old are in very many cases the best, is undoubtedly true; that new ways are sometimes

better than old, is also as undoubtedly true. It is only by comparing them that one can satisfy himself fairly and properly which path will lead him most directly to the desired object.

The matters upon which farmers, and good farmers, differ, are so numerous that no one can expect to settle them all for himself in one year, or even in one life. This is matter of rejoicing, for every farmer may be assured that he can never exhaust his opportunities for learning something new. The pleasure of acquiring knowledge—and this is one of our highest pleasures—is always to be possible with the tiller of the soil.

Is your corn best when planted deep in the soil, or when put near the surface? Does the cornfield yield a better crop when you spread all your manure, or when you put it wholly, or in part, in the hill? Is this crop best when you make no hill, or when you earth up, around it? How many hills, or how many stalks upon the acre give the largest amount of grain? Is it best to plant in hills or in drills?

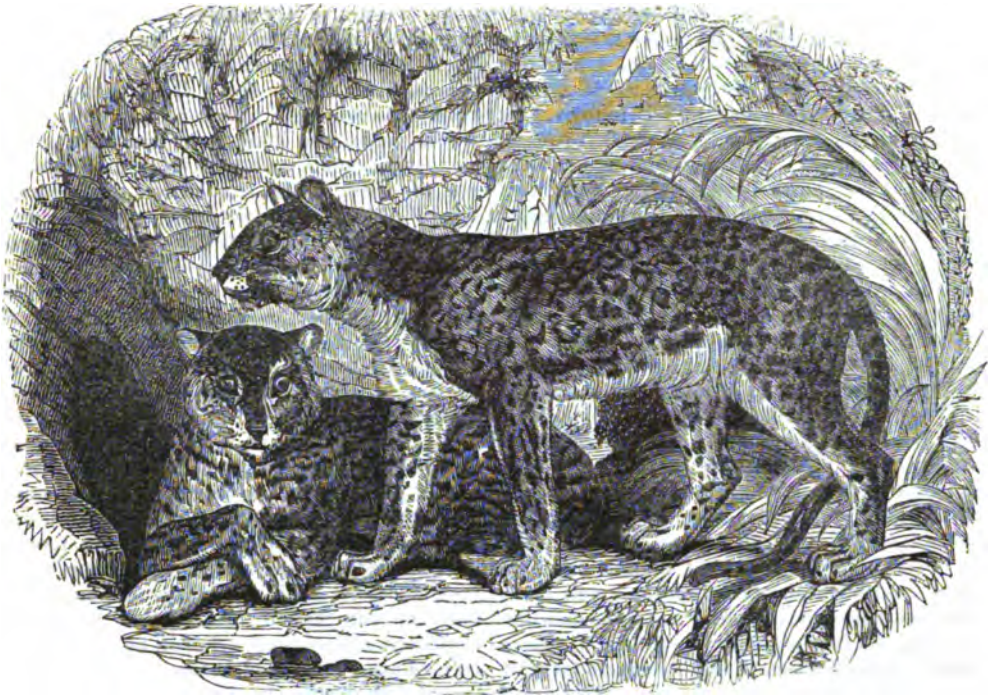
For potatoes, is it best to spread all the manure? or will you put it in the hill? If in the hill, will you have it above or below the seed? Are hills or drills best? Do you cut the seed, or plant it whole? Do you put the seed deep in the earth or keep it near the surface?

Is grass-seed best sowed with grain in the spring? or will you plow up the stubble and sow in August and September? Or will you seed down to grass with the corn crop? Or will you simply invert your bound-out fields, top-dress, and put on the grass-seed immediately! Which of all is the safest or most profitable.

Shall your manure be plowed down under the sod, or will you, after plowing, put it on the surface and harrow it in? Do you find the most benefit from it when you use it fresh from the barn, or when you let it ferment and pulverize before it goes upon the land?

These and a thousand similar questions are disputable; and the correct answer to most of them you must learn by observations upon your *own lands*, and the lands of your neighbors. Books and papers upon agriculture are valuable; they give many correct general principles and many useful hints; but they were not written with especial reference to the soil and subsoil of *your own farm*; and their teachings need modifications which your own observations and experience must point out. If you will but use your experience and your common sense in connexion with books you will find the books valuable aids; but it is only when you let what you have seen, qualify and explain what you read, that you can profit much by reading.

We come then to the point from which we ought to have started—that the *farm, your own farm*, is a place for study and observation; and that in order to learn with correctness and satisfaction, you must keep something like a regular journal in which your doings and observations must be noted down. Most men are apt to forget. The daily record will at all times enable you to recall past observations, and to bring them up to bear upon your future practice.



Male and Female Leopards.

THE LEOPARD.

CONSIDERABLE difference of opinion exists among naturalists whether the panther and the leopard are to be regarded as distinct animals, or are only climatal varieties of one original species, the remarkable similarity in their habits and dispositions induces us to regard them as the same animal, the difference probably arising from some variations in the climate or locality in which they are found, or from other accidental causes.

The leopard is a native of Africa. It is also found in some parts of Asia. The upper part of its body is of a bright tawny yellow, with numerous black roundish spots. These, however, vary in intensity in different specimens, and are often slightly ocellated, or have the middle paler. Instances sometimes occur in which the animal is black, with the spots of a deeper shade. Of a young but full-grown animal measured by F. Cuvier, the body was three feet six inches in length, and the tail two feet three inches; when standing, its height was about two feet.

The leopard is an inhabitant of the wooded parts of the country, and preys upon the smaller races of animals, such as deer, antelopes, &c. He is said to be a most expert climber, and pursues the monkeys among the branches of the trees with great agility. His common mode of attack however is by lying in ambush, whence he springs upon his prey with almost unerring precision. Should he happen to miss his aim, he continues the pursuit, and such are the promptness and agility of his motions, that few animals are able to escape.

The following instance of the determination with which the leopard defends himself in case of attack, is from the pen of an eyewitness. "I was at Jaffna, at the northern extremity of the island of Ceylon, in the beginning of the year 1819, when one morning my servant called me an hour or two before my usual time with "Master, master! people sent for master's dogs; tiger in the town!" Now my dogs chanced to be some very degenerate specimens of a fine species called the Poligar dog, which I should designate as a sort of wiry greyhound, without scent. I kept them to hunt jackals; but tigers are very different things. By the way, there are no real tigers in Ceylon, but leopards and panthers are always called so by ourselves as well as by the natives. This turned out to be a panther. My gun chanced not to be put together, and while my servant was doing it, the collector and two medical men who had recently arrived in consequence of the cholera having just then reached Ceylon from the continent, came to my door, the former armed with a fowling-piece and the two latter with remarkably blunt hog-spears. They insisted upon setting off without waiting for my gun, a proceeding not much to my taste. The tiger (I must continue to call him so) had taken refuge in a hut, the roof of which, like those of the Ceylon huts in general, spread to the ground like an umbrella; the only aperture into it was a small door about four feet high. The collector wanted to get the tiger out at once. I begged to wait for my gun; but no: the fowling-piece (loaded with ball of course) and the two hog-spears were quite enough. I got a hedge-stake and awaited my fate, from very shame. At this

moment, to my great delight, there arrived from the fort an English officer, two artillery-men, and a Malay captain; and a pretty figure we should have cut without them, as the event will show. I was now quite ready to attack, and my gun came a minute afterward. The whole scene which follows took place within an enclosure about twenty feet square, formed on three sides by a strong fence of Palmyra leaves, and on the fourth by the hut. At the door of this the two artillery-men placed themselves: and the Malay captain got on top to frighten the tiger out by worrying it; an easy operation, as the huts there are covered with cocoa-nut leaves. One of the artillery-men wanted to go into the tiger, but we would not suffer him. At last the beast sprang. This man received it on his bayonet, which he thrust apparently down its throat, firing his piece at the same moment. The bayonet broke off short, leaving less than three inches on the musket; the rest remained in the animal, but was invisible to us. The shot probably went through his cheek, for it certainly did not seriously injure him, as he instantly rose upon his legs with a loud roar, and placed his paws upon the soldier's breast. At this moment the animal appeared to me to reach about the centre of the man's face; but I had scarcely time to observe this, when the tiger, stooping his head, seized the soldier's arm in his mouth, turned him half round staggering, threw him over on his back, and fell upon him. Our dread now was, that if we fired upon the tiger we might kill the man. For a moment there was a pause, when his comrade attacked the beast exactly in the same manner as the gallant fellow himself had done. He stuck his bayonet into its head; the tiger rose at him; he fired; and this time the ball took effect, and in the head. The animal staggered backward, and we all poured in our fire. He still kicked and writhed, when the gentlemen with the hog-spears advanced and fixed him, while he was finished by some natives beating him on the head with hedge-stakes. The brave artillery-man was after all but slightly hurt. He claimed the skin, which was very cheerfully given to him. There was however a cry among the natives that the head should be cut off: it was; and in so doing the knife came directly across the bayonet. The animal measured little less than four feet from the root of the tail to the muzzle. There was no tradition of a tiger having been seen in Jaffna before: indeed, this one must have either come a distance of almost twenty miles, or have swam across an arm of the sea nearly two miles in breadth; for Jaffna stands upon a peninsula on which there is no jungle of any magnitude."

We are best acquainted with the leopard in a state of confinement. A pair belonging to the menagerie in the Tower of London, attracted much notice from the elegance and activity of their motions. The female was remarkably agile, bounding about the cell with the quickness of thought, apparently touching the four sides of it almost simultaneously, and evincing the most wonderful pliability of form and muscular power. But the most interesting account of this animal in a state of captivity, is from the pen of Mrs. Bowditch, in a communication to London's "Magazine

of Natural History."—"I am induced to send you some account of a panther which was in my possession for several months. He and another were found when very young in the forest, apparently deserted by their mother. They were taken to the king of Ashantee, in whose palace they lived several weeks, when my hero, being much larger than his companion, suffocated him in a fit of romping, and was then sent to Mr. Hutchinson, the resident left by Mr. Bowditch at Coomassie. This gentleman, observing that the animal was very docile, took pains to tame him, and in a great measure succeeded. When he was about a year old, Mr. Hutchinson returned to Cape Coast, and had him led through the country by a chain, occasionally letting him loose when eating was going forward, when he would sit by his master's side, and receive his share with comparative gentleness. Once or twice he purloined a fowl, but easily gave it up to Mr. Hutchinson, on being allowed a portion of something else. The day of his arrival, he was placed in a small court leading to the private rooms of the governor, and after dinner was led by the ear into the room, where he received our salutations with some degrees of roughness, but with perfect good humor. On the least encouragement he laid his paws upon our shoulders, rubbed his head upon us, and his teeth and claws having been filed, there was no danger of tearing our clothes. He was kept in this court for a week or two, and evinced no ferocity except when one of the servants tried to pull his food from him; he then caught the offender by the leg, and tore out a piece of flesh; but he never seemed to owe him any ill-will afterward. He one morning broke his cord, and the cry being given, the castle gates were shut, and a chase commenced. After leading his pursuers two or three times round the ramparts, and knocking over a few children by bouncing against them, he suffered himself to be caught and led quietly back to his quarters, under one of the guns of the fortress.

"By degrees the fear of him subsided, and orders having been given to the sentinels to prevent his escape through the gates, he was left at liberty to go where he pleased, and a boy was appointed to prevent him from intruding into the apartments of the officers. His keeper, however, generally passed his watch in sleeping, and Sai, as the panther was called after the royal giver, roaming at large. On one occasion he found his servant sitting on the step of the door, upright, but fast asleep, when he lifted his paw, gave him a blow on the side of the head, which laid him flat, and then stood wagging his tail as if enjoying the mischief he had committed. He became exceedingly attached to the governor, and followed him everywhere like a dog. His favorite station was at the window of the sitting-room, which overlooked the whole town; there, standing on his hind-legs, his fore-paws resting on the ledge of the window, and his chin laid between them, he appeared to amuse himself with what was passing beneath. The children also stood with him at the window; and one day, finding his presence an encumbrance, and that they could not get their chairs close, they

used their united efforts to pull him down by the tail. He one morning missed the governor, who was settling a dispute in the hall, and who, being surrounded by black people, was hidden from the view of his favorite. Sai wandered with a dejected look to various parts of the fortress in search of him, and while absent on this errand the audience ceased; the governor returned to his private rooms, and seated himself at a table to write. Presently he heard a heavy step coming up stairs, and raising his eyes to the open door, he beheld Sai. At that moment he gave himself up for lost, for Sai immediately sprang from the door on to his neck. Instead however of devouring him, he laid his head close to the governor's, rubbed his cheek upon his shoulder, wagged his tail, and tried to evince his happiness. Occasionally, however, the panther caused a little alarm to the other inmates of the castle, and the poor woman who swept the floors, or to speak technically, the *pra-pra* woman, was made ill by her fright. She was one day sweeping the boards of the great hall with a short broom, and in an attitude nearly approaching to all-fours, and Sai, who was hidden under one of the sofas, suddenly leaped upon her back, where he stood in triumph. She screamed so violently as to summon the other servants; but they, seeing the panther, as they thought, in the act of swallowing her, one and all scampered off as quickly as possible; nor was she relieved till the governor, who heard the noise, came to her assistance. Strangers were naturally uncomfortable when they saw so powerful a beast at perfect liberty, and many were the ridiculous scenes which took place, they not liking to own their alarm, yet perfectly unable to retain their composure in his presence.

"This interesting animal was well fed twice every day, but never given anything with the life in it. He stood about two feet high, and was of a dark yellow color, thickly spotted with black rosettes; and, from the good feeding, and the care taken to clean him, his skin shone like silk. The expression of his countenance was very animated and good tempered, and he was particularly gentle to children; he would lie down on the mats by their side when they slept; and even the infant shared his caresses and remained unhurt. During the period of his residence at Cape Coast, I was much occupied by making arrangements for my departure from Africa, but generally visited my future companion every day, and we in consequence became great friends before we sailed. He was conveyed on board the vessel in a large wooden cage thickly barred in the front with iron. Even this confinement was not deemed a sufficient protection by the canoe-men, who were so alarmed at taking him from the shore to the vessel, that in their confusion they dropped the cage into the sea. For a few minutes I gave up my poor panther as lost, but some sailors jumped into a boat belonging to the vessel, and dragged him out in safety. The beast himself seemed completely subdued by his ducking; and as no one dared to open his cage to dry it, he rolled himself up in one corner, nor roused himself till after an interval of some days, when he recognised my voice. When I first spoke

he raised his head, held it on one side, then on the other, to listen, and when I came fully into his view he jumped on his legs and appeared frantic: he rolled himself over and over, he howled, he opened his enormous jaws, and cried, and seemed as if he would have torn his cage in pieces. However, as his violence subsided, he contented himself with thrusting his paws and nose through the bars of his cage to receive my caresses. I suspect that he had suffered from sea-sickness, as he had apparently loathed all food; but after this period he ate everything that was given to him.

"The greatest treat I could bestow upon my favorite was lavender-water. Mr. Hutchinson had told me that on the way from Ashantee he drew a scented handkerchief from his pocket, which was immediately seized on by the panther, who reduced it to atoms; nor could he venture to open a bottle of perfume when the animal was near, he was so eager to enjoy it. I indulged him twice a week by making a cup of stiff paper, pouring a little lavender-water into it, and giving it him through the bars of his cage: he would drag it to him with great eagerness, roll himself over it, nor rest till the smell had evaporated. By this I taught him to put out his paws without showing his nails, always refusing the lavender-water till he had drawn them back again, and in a short time he never on any occasion protruded his claws when offering me his paw.

"We lay eight weeks in the river Gaboon, where he had plenty of excellent food, but was never suffered to leave his cage, on account of the deck being always filled with black strangers, to whom he had a very decided aversion, although he was perfectly reconciled to white people. His indignation, however, was constantly excited by the pigs, when they were suffered to run past his cage; and the sight of one of the monkeys put him in a complete fury. While at anchor in the before-mentioned river, an orang-outang was brought for sale, and lived three days on board, and I shall never forget the uncontrollable rage of the one, or the agony of the other at this meeting. The orang was about three feet high, and very powerful in proportion to his size; so that when he fled with extraordinary rapidity from the panther to the further end of the deck, neither man nor things remained upright when they opposed his progress: there he took refuge in a sail, and although generally obedient to the voice of his master, force was necessary to make him quit the shelter of its folds. As to the panther, his back rose in an arch; his tail was elevated, and perfectly stiff; his eyes flashed, and as he howled he showed his huge teeth: then, as if forgetting the bars before him, he tried to spring on the orang to tear him to atoms. It was long before he recovered his tranquillity; day and night he appeared to be on the listen, and the approach of a large monkey we had on board, or the intrusion of a black man, brought a return of his agitation.

"We at length sailed for England with an ample supply of provisions; but unhappily we were boarded by pirates during the voyage, and nearly reduced to starvation. My panther must have perished, had it not been for a collection of more than three hundred

parrots with which we sailed from the river, and which died very fast while we were in the northwest trades. Sai's allowance was one per diem; but this was so scanty a pittance that he became ravenous, and had not patience to pick all the feathers off before he commenced his meal. The consequence was, he became very ill, and refused even this small supply of food. Those around tried to persuade me that he suffered from the colder climate; but his dry nose and paws convinced me that he was feverish, and I had him taken out of his cage, when, instead of jumping about and enjoying his liberty, he lay down and rested his head upon my feet. I then made him three pills, each containing two grains of calomel. The boy who had the charge of him, and who was attached to him, held his jaws open, and I pushed the medicine down his throat. Early the next morning I went to visit my patient, and found his guard sleeping in the cage with him; and having administered a further dose to the invalid, I had the satisfaction of seeing him perfectly cured by the evening. On the arrival of the vessel in the London Docks, Sai was taken ashore, and presented to the Dutchess of York, who placed him in Exeter 'Change, to be taken care of till she herself went to Oatlands. He remained there for some weeks, and was suffered to roam about the greater part of the day without any restraint. On the morning previous to the dutchess's departure from town, she went to visit her new pet, played with him, and admired his healthy appearance and gentle deportment. In the evening, when her royal highness's coachman went to take him away, he was dead in consequence of an inflammation on his lungs."

MISERIES OF INDOLENCE.

NONE so little enjoy life, and are such burdens to themselves, as those who have nothing to do; for,

"A want of occupation is not rest—
A mind quite vacant, is a mind distressed."

Such a man is not of God's order; and opposes his obvious design in the faculties he has given him, and in the condition in which he has placed him. Nothing, therefore, is promised in the Scriptures to the indolent. Take the indolent, with regard to exertion. What indecision! What delay! What reluctance! What apprehension! The slothful man says, "There is a lion without, and I shall be slain in the street!" "The way of the slothful man is a hedge of thorns; but the way of the righteous is made plain." Take him with regard to health. What sluggishness of circulation! What depression of spirits! What dullness of appetite! What enervation of frame! Take him, with regard to temper and enjoyment. Who is pettish and fretful? Who feels wanton and childish cravings? Who is too soft to bear any of the hardships of life? Who broods over every little vexation and inconvenience? Who not only increases real, but conjures up imaginary evils, and gets no sympathy from any one in either? Who

feels time wearisome and irksome? Who is devoured with ennui and spleen? Who oppress others with their company and their questions, and censorious talk? The active only have the true relish of life. He who knows what it is to labor, knows what it is to enjoy. Recreation is only valuable, as it unbends us—the idle know nothing of it. It is exertion that renders life delightful, and sleep sweet and undisturbed. That the happiness of life depends on the regular prosecution of some laudable pursuit or lawful calling, which engages, helps, and enlivens all our powers, let those bear witness who, after spending years in active usefulness, retire to enjoy themselves. Prayer would be always offered up for their servants and wives, and for themselves, too. The indolent are a burden to themselves.—*W. Jay.*

FEMALE CHARACTERS OF SCRIPTURE.

THE manner in which woman is noticed in the practical parts of Scripture, accords with the place she is allowed to hold in the Christian economy. The precepts which are to regulate female conduct are equally precise with those which apply to the other sex, and the examples equally instructive. We can not, indeed, but be peculiarly struck with the natural and appropriate, as well as beautiful delineation of female character in Scripture. No point is overcharged—no virtue exaggerated. The portrait is the more affecting, because it is so like. It is the gentle, tender, and feeling woman whom we meet with in real life; and though the sublime situations in which she is placed, as well as the language and imagery of Scripture, invest the heroine of the Bible with a peculiar charm, she is not so highly raised above ordinary circumstances as not to provoke our sympathy, and invite our imitation. On this account, the illustrations of the sacred volume are of the highest value. The female Christian who is familiar with them needs few other models. Besides the chasteness and simplicity which characterize these examples, there is a detail about them which is not only graphically true, but practically instructive. It is not merely by their prophetic visions, or inspired songs that we are made acquainted with the female worthies of the ancient church; we converse with them in their homes—we see them in the discharge of family and social functions; and we find in general, that those who were the most highly honored were the most blameless and amiable, according to our ideas of female excellence. The Bible might therefore be recommended, were it only for its moral illustrations; and those who think lightly of its mysteries, are often not without appreciation of its value in this point of view. But mutilation, while it robs the Christian system of its beauty, spoils its effect. There is no part independent of another; take it in its perfect gradation, the harmony is complete—but the abstraction of a single principle can not be without prejudice to the whole.—*Sears' Bible Biography.*



River Jabbok.

THE RIVER JABBOK (PALESTINE).

THE river Jabbok now bears the name of Zerka. Its waters first collect in the south of Jebel Haouran. In crossing westward, across the dry plain, to enter the Belka, it more than once takes its course under ground, and is quite dry in the summer; but after it has passed the plain, the contributions it receives make it a perennial stream, although in summer much attenuated. At the point where it enters the hilly region is the Kalaut-ez-Zerka, or castle of Zerka, which is one of the stations of the Syrian pilgrims' caravan. Robinson, who was at this place in the month of November, states that "it is but a sorry rivulet embedded among reeds, but its waters are clear and well tasted." At a point about midway between this place and the mouth of the river, where it was crossed by Buckingham, its course lies between tall and abrupt cliffs, about 500 feet high, which look as if separated by some convulsion of nature to give it passage. It is in fact a deep ravine in a plain, the dark sides of which are in general destitute of verdure, while the plain at the top, on both sides, is covered with a light red soil, and bears marks of high fertility. At the bottom of the ravine we find a small river flowing from the eastward, and which appears here to have just made a sharp bend from the northward, and from this point to go nearly west to discharge itself into the Jordan. "The banks of the stream," says Buckingham, "were so thickly wooded with oleander and plane-trees, wild-olives, and wild-almonds in blossom, pink and white sicklyman-flowers, and others, the names of which were unknown to us, with tall and waving reeds, at least fifteen feet in height, that we could not perceive the waters through them from above, though the presence of these luxuriant borders marked the windings of its course, and the murmur of its flow was echoed through its long deep channel, so as to be heard

distinctly from afar. On this [the northern] side of the stream, at the spot where we forded it, is a piece of wall, solidly built upon the inclined slope, constructed in a uniform manner, though of small stones, and apparently finished at the end which was toward the river, so that it never could have been carried across, as we at first supposed, either for a bridge or to close the pass. This was called by the Arabs, *Shughl-beni-Israel*, or the work of the sons of Israel; but they knew of no other traditions regarding it. The river where we crossed it, at this point, was not more than ten yards wide, but it was deeper than the Jordan and nearly as rapid, so that we had some difficulty in fording it. As it ran in a rocky bed, its waters were clear, and we found their taste agreeable."

We know not that the river has been crossed lower down than this by any traveller besides Burckhardt, from whose brief indication it appears still to flow in a deep valley, through banks overgrown with the *solanum furiosum*. As might be expected in the beginning of July, he found it "a small river;" but must, even on his own showing, be under some mistake in saying that it "empties itself into the Jordan about an hour and a half from the spot where it issues from the mountain."

SWALLOWS.

BY MRS. CHILD.

THERE are different theories on the subject of instinct. Some consider it a special revelation to each creature; others believe it is handed down among animals from generation to generation, and is therefore a matter of education. My own observations two years ago, tend to confirm the latter theory. Two barn-swallows came into our woodshed in the

spring-time. Their busy earnest twitterings led me at once to suspect they were looking out a building spot; but as a carpenter's bench was under the window, and frequent hammering, sawing, and planing, were going on, I had little hope that they would choose a location under our roof. To my surprise, however, they soon began to build in the crotch of a beam over the open doorway. I was delighted, and spent more time watching than "penny-wise" people would have approved. It was, in fact, a beautiful little drama of domestic love. The mother bird was so busy, and so important, and her mate was so attentive! Never did any new-married couple take more satisfaction with their first nicely-arranged drawer of baby-clothes than they did in fashioning their little woven cradle.

The father bird scarcely ever left the side of the nest. There he was all day long, twittering in tones that were most obviously the out-pourings of love. Sometimes he would bring in a straw, or hair, to be interwoven in the precious little fabric. One day my attention was arrested by a very unusual twittering, and I saw him circling round with a large downy feather in his bill. He went over the unfinished nest, and offered it to his mate with the most graceful and loving air imaginable; and when she put up her mouth to take it, he poured forth such a gush of glad sound! It seemed as if pride and affection had swelled his heart till it was almost too big for his little bosom. The whole transaction was the prettiest piece of fond coquetry on both sides that it was ever my good luck to witness.

It was evident that the bird had formed correct opinions on "the woman question," for during the process of incubation he volunteered to perform his share of household duty. Three or four times a day would he, with coaxing twittering, persuade his patient mate to fly abroad for food; and the moment she left her eggs, he would take the maternal station, and give a loud alarm whenever cat or dog came about the premises. He certainly performed the office with far less ease and grace than she did; it was something in the style of an old bachelor tending a babe; but nevertheless it showed that his heart was kind, and his principles correct concerning division of labor. When the young ones came forth he pursued the same equalizing policy, and brought at least half the food for his greedy little family.

But when they became old enough to fly, the veriest misanthrope would have laughed to watch their manœuvres! Such a chirping and twittering! Such diving down from the nest and flying up again. Such wheeling round in circles, talking to the young ones all the while. Such clinging to the sides of the shed with their sharp claws to show the timid little fledglings that there was no need of falling!

For three days all this was carried on with increasing activity. It was obviously an infant flying school.

But all their talking and fussing was of no avail. The little downy things looked down, and then looked up, and, alarmed at the infinity of space, sunk down into the nest again. At length, the parents grew impatient; and summoned their neighbors. As I was picking up chips one day, I found my head encircled with a swarm of swallows. They flew up

to the nest and jabbered away to the young ones! then clung to the walls, looking back to tell how the thing was done; they dived and wheeled and balanced and floated in a manner perfectly beautiful to behold.

The pupils were evidently much excited. They jumped on the edge of the nest, and twittered and shook their feathers, and waved their wings, and then hopped back again, saying, "It's pretty sport, but we can't do it."

Three times the neighbors came, and repeated their graceful lesson. The third time two of the young birds gave a sudden plunge downward, and then fluttered and hopped till they lighted on a small upright log. And oh! such praises as were warbled by the whole troop! The air was filled with their joy! Some were flying around swift as a ray of light; others were perched on the hoe-handles and the teeth of the rakes; multitudes clung to the wall, after the fashion of their pretty kind, and two were swinging in most graceful style on a pendent hoop. Never, while memory lasts, shall I forget the swallow party! I have frolicked with blessed Nature much and often, but this, above all her gambols, spoke into my inmost heart like the glad voices of little children. The beautiful little family continued to be our playmates until the falling leaves gave token of approaching winter. For some time the little ones came home regularly to their nests at night. I was ever on the watch to welcome them, and count that none were missing. A sculptor might have taken a lesson in his art from these little creatures, perched so gracefully on the edge of their clay-built cradle, fast asleep, with heads hidden under their folded wings. Their familiarity was wonderful. If I hung a gown on a nail I found a little swallow perched on the sleeve. If I took a nap in the afternoon, my waking eyes were greeted by a swallow on the bed-post; in the summer twilight, they flew about the sitting-room in search of flies, and sometimes lighting on chairs and tables. I almost thought they knew how much I loved them. But at last they flew away to more genial skies, with a whole troop of relations and neighbors. It was a deep pain to me that I should never know them from other swallows, and that they would have no recollection of me.

VIRGIN EARTH.

VIRGIN earth, correctly speaking, is that which has never been disturbed by the plough or any other implement of the cultivator. The husbandman, however, does not always so strictly confine the application of the term virgin soil; for we frequently find him applying it to soils that have been cultivated at some distant period, but which have been allowed to rest undisturbed so long, that it is presumed they possess the same properties.

Agriculture of late years has been endeavoring to raise itself to a higher position upon the scale of general intelligence than it formerly used to possess and for this purpose the aid of several of the sciences

—particularly chymistry and geology—have been invoked to render their assistance. Chymistry, no doubt, has already achieved much that was both necessary and desirable; but, notwithstanding this, a great deal remains to be achieved before agriculture can be reduced to anything approaching a regular system.

One thing, however, yet seems wanting, and that is, a careful and scientific examination into the nature and properties of virgin soil, in order that its peculiarly exciting and stimulating qualities upon vegetable productions generally should be accurately determined; for, were this the case, there would then be little art or mystery, where a soil had become impoverished by over-cropping or mismanagement, in applying the necessary remedy (in the form of a manure of some sort or other) for restoring it to its original state, or to a condition as nearly resembling virgin earth as possible. However exciting and invigorating the principle may be which this soil is found to possess, it is first necessary to expose it to the action of the atmosphere, in order that this principle be called into full and active operation; for while it continues shut out from the influence of the sun and the atmosphere, the power which it has upon vegetation appears to lie inert; but it ought to be borne in mind that nearly all sorts of plants derive a portion of their nourishment from water and the constituent parts of the atmosphere, and are not, consequently, wholly dependant upon the most fertile soil for *all* that they require to bring them to a state of perfect maturity.

Farmers are commonly in the habit of thus designating all such soils as appear to them to have been deposited at a depth out of the reach of the ordinary mode of tillage; and hence it is that so many of them are now found introducing the practice of trench-ploughing, whereby a portion of this *virgin earth* is raised to the surface; and by its becoming mixed at once with the portion of the soil that has become weakened and impaired in its powers of productiveness, the whole mass is thereby greatly improved, and superior crops may be raised thereon for several succeeding years. Care, however, should be taken in trench-ploughing, not to throw upon the surface a subsoil of an inferior quality; for if there is a deficiency of soil of the primary order, trench-ploughing would only raise to the surface a substratum, or soil of a secondary order, and a great deal more of harm than of good would necessarily be the result. Hence it is, most probably, that among practical farmers so much diversity of opinion prevails regarding the utility of subsoil and trench-ploughing; for since there is so much diversity among soils, it would be an absurdity to suppose that the same treatment would everywhere succeed.

Nothing more clearly elucidates the fertility of virgin earth, as well as the necessity which exists for its being exposed to the action of the atmosphere, than the system of cultivation adopted in most *new* countries; and for example Upper Canada, as a corn-growing country, may be referred to. The primeval forests of that and countries similarly situated grow upon what may very properly be termed virgin soils. Now in these parts, even where there is but little

underwood, and where the woods are termed open (in comparison with those where underwood abounds), they may be traversed for scores of miles without a single blade of grass being anywhere met with; but no sooner are the forests removed, either by fire or otherwise, and the influence of the sun and air brought into contact with the soil, or the surface of it at least, than vegetable productions, of one description or another, are found taking possession of the soil, and growing most luxuriantly. It is upon this surface soil that wheat and other corn-crops are grown in the new settlements; for the plough is not employed, for these two reasons, namely, the high rate of laborers' wages, and the difficulty attending the ploughing up of forest ground before the roots of the trees are sufficiently decayed to render them no longer any great impediment to the plough.

It is necessary, however, that the seed be covered with soil; for this means a small triangular harrow, possessing considerable strength, is employed, whereby the seed gets a slight covering. Sometimes one, sometimes two, or even a greater number of crops, are raised in this way. But as the amount of this soil which is then called into action is small, it ought not to surprise any one, if it should, after a year or two, appear to be exhausted, which is commonly the case; although it is a very common circumstance to find the settlers continuing to put in their seed, wheat or rye (upon the old stubbles, and without ploughing) for several years, often indeed until the crops are scarcely worth the trouble of reaping, which, to say the least of it, is exceedingly bad management.

But those soils, if properly managed, will continue for many years, without the aid of any extraneous substance in the character of manure, to yield good crops; but then means must be taken to bring to the surface, successive portions of the soil; first in the way already stated, then by shallow ploughing, and afterward by deeper ploughing, by which means a new supply of the virgin earth will be brought into operation; and not only this, but the amount of loose soil will be greatly increased, and hence the roots of plants will have a large space to range in, and enlarged facilities for obtaining the food they may require.

LOVE OF NATURE.

BY MISS SEDGWICK.

LORD BACON speaks of the contemplation of nature as a means of health; and certainly a love of nature is, in its influence on the mind and body, one of the healthiest of our affections. But this love needs cultivation—there are few with whom it is spontaneous, and they are persons of keen sensibility, quick perception, and accurate observation.

This love, like everything else, is to be acquired by *attention*. If you are in the habit of observing the face of nature, you will certainly grow to love it.

Is it not deplorable that multitudes should live through a long life, and die without touching the feast everywhere spread before them? They are insensible to the

"Sweet approach of eve or morn."

They are blind to the beautiful processes of the season, and the wonder-working changes of the atmosphere. For them in vain is the bloom of spring, and the hues of the summer harvest-fields. In vain for them the magnificent swelling of the ocean; the water-falls, the flowery brooks; "eyes have they, but they see not—ears, but they hear not." Now, that you may not pass through life with the absolute loss of a pure, certain, and permanent source of happiness, I pray you to make the beauties of nature a *study*. If you live in the city, you are nearly debarred of the means. The book is closed upon your eye; but even in the city, there is here and there a scattered leaf. There are parks and squares where the fresh grass springs, and flowery shrubs give their sweet odors to the air. In every street, amid brick, mortar, and pavements, that speak only of man, are trees God's witnesses. Observe them, and they will express to you in characters of beauty, the changing seasons. See their freshening stems and swelling buds in spring, their wealth of leaves in summer, their brilliant hues in autumn, and in winter the naked, graceful forms of those limbs, over which the green garments of summer hung.

Man can not cover up or efface rivers and bays, those glorious works of God, on which cities are planted. You may occasionally get a glimpse of these, even if you are buried in the heart of a city. Watch the vessels gliding on the water, and the beautiful effect of wind and light upon them. Turn your eyes upward. Your firmament is circumscribed, but you can see its lights, the most soul-stirring objects that meet the eye of man.

If you are so happy as to live in the country, the book of nature is at your command, and you may con your lessons on every hill-side. The roughest, most barren, most monotonous landscape, has an expansive firmament, sunshine and clouds, an ever-changing and perpetual beauty. You may not have the prairie-gardens of the west, but nature, if you love her, will teach you to make gardens of your own; and kind mother earth will yield you the wherewithal.

But it may be your happiness to live amid beautiful scenery. Do not, then, be like those of whom Byron says,

"Poor paltry slaves! yet born midst noblest scenes—
Why, Nature, waste thy wonders on such men?"

Do not be negligent of your great privilege. Next to having friends and books, we esteem it the greatest happiness of life, to have a home in a beautiful country, amid tree-crested hills, where the streams gushing from their mountain sources, leap and dance along their descending channels, the symbols of youth and happy liberty; where the summer harvest waves on the hill-side; where a quiet river winds through the thick standing corn; where the happy homes of the deep valley just peep through the trees that embower them; where the secluded lake mirrors the silver beauties that cluster round it; and where each season seems to the lover of nature, as to the boy in the fable, the most beautiful.

Each season, I say, for it is only those who are unobservant of nature, that think the winter dreary and devoid of beauty. I do not allude to rare and

transient appearances, when it seems as if nature kindly spread her purest garment over her blighted earth, or to those brilliant days when the earth appears sheeted with glass, when every spear of withered grass is sheathed in crystal, and the trees are hung with jewels, but to the ordinary effects of winter in our rigorous climate.

Do you not love to mark the wavy outlines of the hills that were hidden by the summer foliage; to see the windings of the river, that now its veil has dropped, gleams, or rather smiles upon you all along its course; to see the lake sparkling up like a gem from the bosom of the valley? Have you never observed the effect of the atmosphere in our cold climate: the excessive brightness of the stars in a clear, cold night; the purple and rose-colored light that steals along the south and western hills at the rising of the sun; the transparency of the air in the middle of the day, when the distant mountains look like walls of sapphire; and above all, the indescribable glories of the sunset, when the mountains seem bathed in showers of molten gold and silver; when every cloud that floats along the horizon has the tints of the rainbow; and the sun, that perhaps a moment before had been obscured, shines forth from his pavilion of glowing clouds, and then disappears in a sea of glory?

There is no hyperbole in this. The sunsets are not always so brilliant, but if you will observe, you will admit there is rarely a day that they are not marked by some beauty. Words but feebly express the glories of God which the heavens declare. Nor does it need any peculiar gift to admire them. I have seen school-girls, trained to observation and outdoor pleasures, as much excited, day after day, by a winter's sunset, as a child is by a conjurer's tricks. And is not the excitement more healthy, more ennobling?

These natural pleasures you may always have. In no condition or stage of life will they fail you. Will not, then, a true economy lead you to cherish a love of them? Well might Byron call it a "waste" where they were not enjoyed. They have, too, great moral uses; their tendency is to preserve you from dissipation, from evil speaking, gossiping and coarse pleasures, for their tendency is elevating. They are the ministers of religion. Madame Roland, a noble woman, who from the crimes and abuses of the times in which she lived, fell into the great misery of doubting the existence of God, said, that when she was alone and looking out on nature, her doubts were gone. The Creator is visible in his works, and if you there draw near to him, he will draw near to you.

IMAGINATION.—Rightly directed, wisely used, imagination is the greatest gift and blessing of intellectual man. It raises his taste, softens his feelings, purifies his desires, ennobles his nature, dignifies his life, and tranquillizes his death! To him who has imagination well-directed, the whole universe and all its vicissitudes are but an instrument of eternal music, and the hand of God producing infinite harmony at every touch.



NICHOLAS POUSSIN AND HIS LOCALITIES.—At top, Poussin from a portrait by himself.—Vignettes on the right, Louviers ; Peasants of the Department of Eure ; Château Gaillard.—Vignettes on the left, Evreux ; Pont-Audemer. From sketches by Sorrien and Jules David.

LOCAL MEMORIES OF GREAT MEN.

NICHOLAS POUSSIN.

THE local memories of an artist who, like Poussin, rose to eminence against every adverse fortune,—whose gentle manners and innocent life were unruffled by the sneers of envy, and unseduced by the allurements of licentiousness, present features of unusual interest to the admirers of painting. By the term admirers, we do not mean those who only value the

art of painting for the pleasure it may afford to the eye, but those who, in the spirit of this great artist, believe that it conduces to the virtue, and, of consequence, to the happiness of mankind. "To the young artist," says Maria Graham, "the life of Poussin is a beacon to guide him through every difficulty: an encouragement beyond that which any patronage can afford; for it proves that, in despite of outward circumstances, genius, aided by industry, will be its own protector, and that fame, though she may come late, will never ultimately refuse her favors to real merit."

The cause of his success appears to have been, that Poussin considered whatever was worth doing at all was worth doing well; and that he verified his own emphatic words, replying, when asked late in life by Vigneul de Marville how he gained so high a reputation among the great painters of Italy, "I have neglected nothing." Every science that he could study consistently with the practical part of his art attracted his attention and shared his ardor; and in his favorite pursuit he considered that extensiveness of surface was by no means indispensable to grandeur of design. Hence all his works exhibit the results of profound thought, diligent study, and accurate observation, and, with but very few exceptions are executed on a moderate scale. We find none of his pictures reminding us of the whimsical, but happy description of Peter Pindar, where he satirizes the

"Acres of canvass paved with paint."

The general objection made to his compositions is that they partake too much of the forms and attitudes of the sculpture of antiquity, an objection that is well founded. Indeed, in one of his pictures, that of "The Israelites gathering Manna," he has even ventured to adapt to his subject the figures of the Laocöon, the Niobe, the Seneca, the Antinous, the Wrestlers, the Diana, the Apollo, and the Venus de Medici.

The family of Poussin was noble, but poor. His father Jean Poussin, was a native of Soissons, and served with credit in the regiment of Tavannes during the reigns of Charles IX., Henry III., and Henry IV.; but the poverty of the royal coffers, during that unhappy period, had thrown all the expenses of a military life upon himself, and like many of his brave fellow-soldiers, he was reduced to the greatest indigence. After the taking of Vernon, in which town he then resided, he married Marie de Laisement, the widow of Le Moine, a lawyer of that place; and having quitted the military service, he retired to Andelys in Normandy, sometime in the year 1592, where, in June, 1594, his son Nicholas was born. The earliest indications of a taste for art displayed themselves in Poussin while yet a child, and Passeri, who was contemporary with him, says, in "The Lives of Painters, Sculptors, and Architects," that his schoolmaster used frequently to chide him for making designs on the margins of his books, instead of attending to his regular studies. The beauty of the scenery round Andelys, situated as it is among the hills on the right bank of the Seine, and including in its neighborhood all the subjects represented in the engraving, doubtless fostered the taste of Poussin for landscape composition, a taste which was so strong as not to be overcome even when the subject of his pencil was historical composition. Of this prevailing fancy Fuseli complains, for he says, "The excellence of Poussin in landscape is universally allowed, and when it is the chief object of his picture precludes all censure; but considered as the scene or background of an historical subject, the care with which he executed it, the predilection which he had for it, often made him give it an importance which it ought not to have: it divides our attention, and, from an accessory, becomes a principal part." The sketches which he made amidst this delightful scenery attracted the at-

tention of Quentin Varin, a native of Amiens, who then resided in Andelys, and who taught him the rudiments of his art.

It was with difficulty that Jean Poussin could be persuaded to allow his son to adopt painting as a profession; but having consented, Nicholas soon found that the instructions of Varin were insufficient, and at the age of eighteen, friendless and nearly moneyless, he went to Paris, and studied successively under Ferdinand Elle, of Malines, a portrait painter, and L'Allement, a painter of history, who was deficient, however, in all but the mechanical part of his art, and with whom Nicholas remained only a few weeks. While with the latter, the authoress before quoted says he "contracted a friendship with Philippe de Champagne, which was afterward of singular advantage to him;" but M. Gence, in the *Biographie Universelle*, says that this is a mistake, for that Philippe de Champagne did not go to Paris till 1621. A young nobleman of Poitou became a generous friend to Poussin, and furnished him with money to enable him to pursue his studies; and after the young painter had diligently copied many drawings of Raffaele and Guilio Romano, in the collection of M. Courtois, and otherwise advanced himself in his art, invited him to Poitou, with the view of further patronage and liberal employment. The want of taste, however, of this nobleman's mother did not permit her to value the artist's ability, and he was treated in the light of a domestic drudge, and accordingly he withdrew in disgust, and set out on foot on his return to Paris. In this journey he supported himself by his pencil, accepting any employment and at whatever remuneration he could obtain; the former being so severe, and the latter so scanty, that on arriving at the capital he was attacked by a dangerous sickness, brought on, it is supposed, by extreme labor and a scanty sustenance. He returned to Andelys, where he remained with his family a year, occupying himself in painting both in distemper and oil, for such prices as he could obtain. On his recovery he again proceeded to Paris, and became acquainted with the Cavaliere Marino, the Italian poet, with whom he lived on terms of the closest intimacy, and by whom he was invited to Rome, whither he removed in 1624. As a residence in the "Eternal city" was the chief wish of the painter's heart, he conceived that he should there live in tranquillity, but his friend soon after dying, and the Cardinal Barberini, to whose notice Marino had introduced him, being sent on an embassy to France and Spain, he found himself in a foreign city, destitute of patrons, and without any means of living, excepting what his pencil might afford. Still undaunted, he pursued his art with fervor, selling some of his noblest works for sums barely sufficient to pay for the materials on which they were painted until the return of the cardinal to Rome extricated him from his difficulties. For that dignitary he painted his celebrated picture of the "Death of Germanicus," and the "taking of Jerusalem by the Emperor Titus." He soon after painted the "Martyrdom of St. Erasmus," for St. Peter's, which is now in the pontifical palace of Monte Cavallo. For the Cavaliere de Pozzo he painted his first series of

the "Seven Sacraments of the Romish Church," six of which are now in the collection of the Duke of Rutland, at Belvoir Castle; one having been destroyed by fire in 1816. In the years 1644 and 1647 he also painted a second series, with variations, for M. de Chantelou, which were formerly in the Orleans collection, and are now among the most valued of the pictures belonging to Lord Francis Egerton. They were bought by the late Duke of Bridgewater for 4,900 guineas.

Of the remaining history of this great painter, it will be sufficient in this place to say, that in 1639 he was induced to return to Paris, where he was appointed principal painter to Louis XIII., and had many commissions to execute important works. The envy of contemporary artists disgusted him; and in three years, under the pretence of fetching home his wife and settling various affairs in Italy, he withdrew from France, and finally settled at Rome, where he died in 1665, in the seventy-first year of his age. The estimation in which he was held by Louis XIII. may be gathered from the fact, that in the brevet of his appointment of first painter to the king occur the following passages: "His majesty has chosen and retained him to be his first painter, and in that capacity has given him the general direction of all the works of painting and embellishment that he may henceforward order for the decoration of his royal houses; ordering also, that none of his other painters shall execute any of their works for his majesty without having first submitted their designs to the said Sieur Poussin, and received his directions and advice thereupon. And in order to give him the means of maintaining himself in his service, his majesty grants him the sum of three thousand livres as a yearly salary;" and "his majesty has also granted to the Sieur Poussin the house with the garden lying in the middle of his majesty's gardens of the Tuileries."

We have already referred to the opinion of Fuseli on the merits of Poussin as a landscape painter, to which may be added that of Lanzi, who observes: "I do not mean to exaggerate, when I say that the Carracci improved the art of landscape painting, and Poussin brought it to perfection."

With regard to the imitation of the antique in his figures, Reynolds seems to consider that it arose more from similarity of thought than plagiarism of form. He says: "Poussin lived and conversed with the ancient statues so long, that he may be said to have been better acquainted with them than with the people about him. I have often thought that he carried his veneration for them so far, as to wish to give his works the air of ancient paintings. . . . No works of any modern have so much the air of antique painting as those of Poussin. His best performances have a remarkable dryness of manner, which, though by no means to be recommended for imitation, yet seems perfectly correspondent to that ancient simplicity which distinguishes his style. Like Polidoro, he studied the ancients so much, that he acquired a habit of thinking in their way, and seemed to know perfectly the actions and gestures they would use on every occasion." Fuseli, on the other hand, charges him

with plagiarism, a charge fully borne out by the picture before referred to, "The Israelites gathering Manna." That learned and acute critic observes: "Though Poussin abstracted the theory of his proportions from the antique, he is seldom uniform and pure in his style of design: ideal only in parts, and oftener so in female than in male characters, he supplies, like Pietro Testa, antique heads and torsos with limbs and extremities transcribed from the model."

That he was devotedly attached to the forms of the antique is obvious, and in a letter to M. de Chantelou, he admits that he had applied to painting the theory which the Greeks had introduced into their music; the Dorian for the grave and serious, the Phrygian for the vehement and passionate, the Lydian for the soft and tender, and the Ionian for the riotous festivity of his bacchanals. Still he did not neglect the advantages to be derived from the study of the excellences of Raffaele and Guilio Romano, the former of whom appears to have most deeply excited his admiration. Indeed it has been considered, and with great justice, that he can be hardly said to be inferior to that sublime painter in the purity and majesty of his conceptions, the select beauty of his forms, the grace and dignity of his attitudes, and his just and animated expression of the passions. His compositions, the result of a learned and profound meditation, are simple, grand, and judicious; and it will not be denied that his works are distinguished by a refined and classical observance of the propriety of costume.

To his coloring many objections have been taken, and it must be admitted that in his historical compositions the prevalence of the russet tint and the unbroken red are far from being harmonious or rich. De Piles, indeed, goes so far as to say that he is cold and feeble as a colorist, but to this sweeping censure Mr. Bryant makes the following reply: "It did not occur to that critic, that brilliancy of tints and splendor of color would ill accord with the solidity and simplicity of effect so essential to heroic subjects; and that the sublime and majestic would be degraded by a union with the florid and the gay. The elevation of his mind is conspicuous in everything he undertook; and we are not less impressed with the beauty and grandeur of the scenery he displays in his landscapes, then with the dignified characteristics that distinguish his historical works."

In the last letter this eminent man ever penned he thus expresses himself concerning that part of his art which consists of "things which are not to be learned, and which make an essential part of painting. First, the subject must be noble. It should have received no quality from the mere workman; and to allow scope to the painter to display his powers he should select that most capable of receiving beautiful form. He must begin by composition, then ornament, propriety, beauty, grace, vivacity, costume, probability, and judgment in each and all. These last belong solely to the painter, and can not be taught. They are the golden bough of Virgil, which no man can find or gather, if his fate do not lead him to it. These nine parts deserve, on several accounts, to be treated by some good and learned author." We may close this

paper by a short description of the person of Poussin in aid of the portrait represented above. He was tall and well proportioned; his hair black, but it became very gray toward the end of his life; his complexion olive, his eyes blue, his nose rather long, his forehead large, and his looks altogether dignified yet modest.

VIRTUES OF COLD WATER.

WHAT can exceed the beauty, freshness, and purity of a glass of water taken from the springs? It leaves no mawkish taste behind it, no fictitious or unpleasant odor. When it is taken before breakfast, after a bath or general ablution, it cleanses all the passages, purifying the mouth, and filling it with sweet fluids, making the individual cheerful, hungry, and wide awake. What a contrast this is to creeping down stairs with the eyes half closed, huddling up to the fire, and swallowing scalding tea, eating a few bites of toast, without appetite, and requiring some relish to make them go down. This drinking cold water in the morning dilutes the viscid secretions, such as bile, slimy matter, &c., that have collected during the night, and makes them pass off. The determination being already to the skin by the wet sheet, or sweating and the bath, or by simply washing all over, the cold fluid being then taken into the stomach at first lowers its temperature, and that of all the organs contained in the abdomen, helping still more to lessen any irritation and heat, or undue collection of blood in these parts. The water is rapidly absorbed by the stomach, not digested, as many suppose, and not a drop escapes into the alimentary canal. When it is sucked up by the stomach, it goes into the general current of the circulation; mixing with the blood it is first carried into the lungs, and then sent on by another set of tubes, the arteries, to the tips of the fingers and the points of the toes, and every intermediate part feels its benefits giving new life and activity to everything it comes in contact with. It is then in great haste thrown off (mixed with waste matter), by the skin, in invisible steam, by the kidneys, and by the breath. When a glass of water is swallowed, the stomach, by its motions, diffuses it over all its surface before it takes it up, just as you would wash the face, and it has the same refreshing and beautifying effects, leaving it a more natural temperature, and giving a more natural color. * * * In fine, there is no agent applied to the human body, externally or internally, that has such an influence in awaking all the vital powers to the great restorative capabilities, in arresting the progress of disease, or preventing, when inevitable, a fatal termination, as pure cold water. It is the most powerful therapeutical agent we possess, the most manageable in its application, the most easily obtained, and the most certain in its results. So varied are the modes in which it can be applied, that there is no remedy, that can be made to produce as many diversified and opposite effects: a stimulant, a sedative, a diuretic, a derivative, &c., and a cleanser and restorative in the fullest sense of the terms.

Unchaining all the powers of the constitution, giving nature a general impetus, and leaving uncurbed her desire and efforts to heal, and all this without the necessity of straining any individual function; and after its most mighty results in the most acute and dreadful diseases, leaving no trace of its operation, no mark or after-suffering, to point out where or how its power had been exercised: a conqueror without levying bloodshed—the giver of sound constitutions without levying a tribute—a divine and universal remedy—universal in its application, universally dispensed for the use of all mankind, and in days to come destined to be universally placed at the head of all remedies.

THE FIRESIDE.

PLEASANT is the breakfast hour, and cheerful is the meeting when, refreshed by peaceful slumber, the different members of a family assemble round the table to take their morning repast. At other meals the family may be divided, but, generally, here all are assembled. The busy cares, the hurried turmoils of the day, have not disturbed the spirit; all is peace, cheerfulness, and joy. But pleasant as the breakfast-table is, there is another point of attraction still more so. Cheerful as the breakfast group may be, there is another group more interesting. The point of attraction is the fireside, and the group the beings that gather round it. 'The fireside! where is there a heart that does not glow at the very name?—where is there a spirit that does not spring forward to join the fireside party? At the breakfast table, when the sun is mounting the skies, the table bounteously spread, and the cup running over, with health in the cheek and animation in the eye, there ought to be a warm gush of grateful emotion to the Giver of all good; but still a warmer gush will be required suitably to acknowledge the more delightful enjoyment of a domestic fireside. Whatever may have been your occupation or your cares, however tried with disappointments, and ruffled with unexpected evils, it is all over now for the day at least. The sun has gone down, the shadows of night prevail. The winds are blowing without, but the fire is sparkling within. The shutters are closed, the curtains are drawn; there is yet an hour that may be passed peacefully and pleasantly, let it be passed at the fireside. In the days of our boyhood often have we sat by the fireside, with half a dozen rosy-faced companions. We had our books; played at the games in which young people delight; roasted our apples; told long stories; and laughed till the room rang again; for our hearts were as light as though there was no such thing as care in the world. The future hour and the future year were always bright—we feared nothing, and hoped everything; for we knew, or thought we knew, that as we grew older we should surely be happier. The fireside is a chartered space endeared by a thousand affectionate recollections.



Ancient Warrior and Armor-Bearer.

BARBARITIES OF ANCIENT WARFARE.

In the present article we shall endeavor to exhibit in what is believed to be a right point of view, the various war practices of ancient times, especially the more barbarous. Our object more particularly will be to prove that the ancient Hebrews were not, with respect to such practices, worse, if as bad, as their neighbors; and that they meted out to those whom they conquered no other measure than they would themselves have received had their enemies prevailed. This argument does not abstractedly *justify* the practices. On *abstract* principles war itself is unjustifiable and monstrous. But we conceive it brings the matter to this point,—that when practices which we now abhor were generally prevalent at some former time, we have no right—it would not be just—to make one particular nation the special subject of our reprobation on that account. Our censure should be as general as the practices themselves were. Were no further explanation given, the act of the Hebrew victors in cutting off the thumbs and great toes of their royal captive, would be cited (as other acts not similarly explained have been) as a deed of motiveless and savage barbarity, attesting the innate cruelty of their nature. But when the person thus treated himself lets us know that he regards it as an act of retributive justice,—and when, thus himself mutilated, the bitter remembrance comes before him of the threescore and ten kings who were similarly dealt with by him, and whom, with barbaric pride, he kept to gather their meat under his table,—the case as regards the

Israelites is greatly altered. So far from being a barbarity of their invention, gratuitous and uncalled for, they depart from their ordinary practice to render an act of poetical justice, and thereby expressed in no equivocal terms their detestation of the manner in which this tyrannical king had been wont to treat the illustrious persons who became captive to him.

In speaking about contemporary usages, however, it will be necessary to guard against one dangerous source of misconception. Except with reference to the times in which we ourselves live, we are in the habit of *practically* forgetting that contemporary nations are not necessarily in the same state of civilization; and there are classes of usages, especially such as are connected with war, which, as existing in any one nation, will be much better illustrated, or rather estimated, by the practices of any other nations in a similar state with respect to civilization, *in whatever age existing*, than by references to the usages of contemporary or even neighboring nations.

It is a sad truth to tell, but, being truth, it may be told, that the diminution of the barbarities of war which advancing civilization produces, is less the effect of humane feeling than of the interested considerations which advancing civilization evolves. The savage has *no interest* in being merciful, and therefore—unless by a fortunate accident—he has no mercy. His war is a war of extermination. As in other cases, his object is to injure or disable the enemy as much as possible, and he knows no way of doing this but by destroying as many as possible of their number. His glory is to accumulate the

mortal trophies of those he has slain. . He gives no quarter nor expects to receive it; and if he does take prisoners, it is only that they may in some future day of triumphant festival, taste with tenfold intensity all "the bitterness of death." The reason of this is, that he has no use for their lives, and the only motive which prevents him from destroying them on the spot is—that he may eat them, or that he may offer them in sacrifice to his grim idols.

Then, as a nation becomes settled, and cultivates the arts which belong to settled life, it finds that man has such value, as a laboring or serving animal, as to make his life worth preserving. The captives are therefore spared for the labor of slaves; and this, too, because the settled state of life, while it affords occasion for their being employed to the profit of their owners, so fixes them as to render escape a matter of difficulty. Under this state of things, however, interest will suggest the advantage of allowing the captive to be ransomed by his friends, if communications can be opened with them, and if the sum which they can offer exceeds the value which the captor sets upon his services. A savage could not preserve his prisoner without encumbering himself with the charge of his subsistence. So much does this principle of interest speak to all men, that the savage, who has not himself any use for the bond-services of his captive, and therefore destroys him, will preserve his life if there are facilities for making a profit of him by selling him to those by whom his services may be needed. If also, without any such facilities, the prisoner be a person of consequence (and especially if he belong to a condition of civilization different from that of the captors), the savage will preserve his life if he has the prospect of a valuable ransom—but no longer than that prospect is entertained.

Under this state of things, kings and chiefs, if they have the misfortune to be taken prisoners, are generally exposed to a peculiar treatment, by reason of the active and leading part which their position had obliged them to take against their present conquerors. Sometimes we shall find that they are put to death, and that in cold blood, and with circumstances of ignominy, weeks or months after the conflict has been decided. Oftener they are subjected to some mutilation, and are obliged to render menial and ignominious services to their conqueror, whose pride is exalted by himself and household being served by fallen kings and princes, queens and princesses.

In a still more improved condition of society, where the disadvantages of an act of warfare are generally less unequal than in the savage or semi-civilized conditions, prisoners are taken on both sides; and as both consider that the presence of their own citizens and soldiers is of more advantage than the services of foreign slaves, an exchange of prisoners is the result. If, under these circumstances, a king or chief person should become a prisoner, he obtains his liberty either for a high ransom, or by exchange against one or more persons of the highest rank, or by the cession of some advantage to the captors. The highest state of civilization possible while war exists seem to be indicated by the liberation of officers

(even of high rank) acting under orders, upon their parole engagement, not again during the war to fight against their captors.

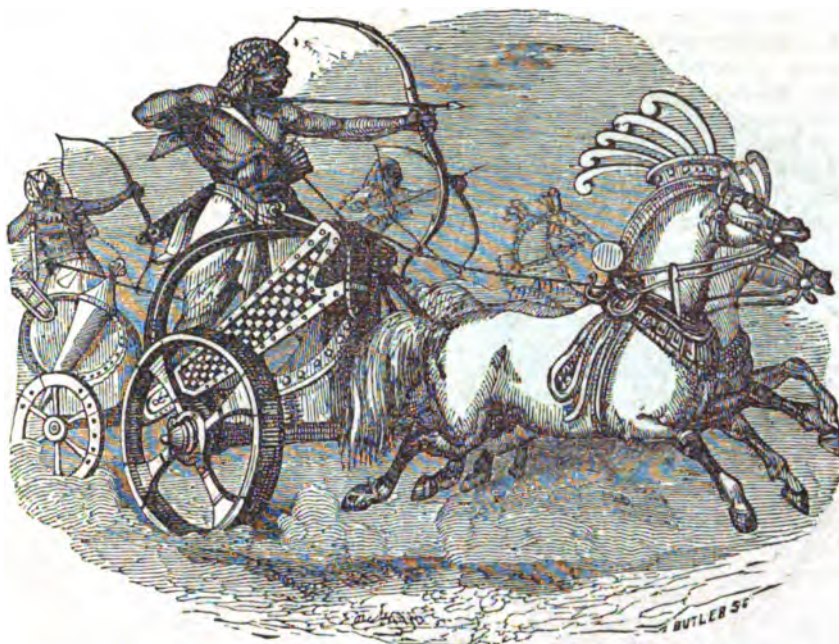
The condition of society, as indicated by war described in this last paragraph, is not to be found in any ancient nation, although parts of it might now and then be brought out by some accident.

We have entered into this statement because the true question as to the war practices of the Hebrews is nothing more or less than this—whether their practices in war did or did not correspond with the progressive developments of their national condition; not—whether in the *first* stage of their social progression they had the war usages which are found only in the *last*. This last question involves an expectation which can not with any show of reason be entertained, by which nevertheless lies at the bottom of most of the objections which have been made to the war-practices of the Israelites.

Now in answer to the question which we have proposed, we have not the least hesitation in declaring our conviction that the practices of the Hebrews, *as regards the treatment of prisoners* (which is the trying point in the larger question), were not only not worse, but not as bad as those of other nations in the same state of civilization. It would be almost unnecessary to state that in the long period over which the history of the Hebrew people extends, they passed through various states of civilization, were it not that we constantly hear talk of "the customs of the Hebrews" in such sort as to convey the impression that the practices which we find among that people at any one period were common to all periods, whereas the obvious fact is, that their social condition was progressive, like that of all other nations; and that, as time passed, many old customs were relinquished, and many new ones came into use.

During the time in which the Hebrews were engaged in the conquest of Canaan, and were well settled in that country—that is, down to the time of King David—they were in a condition very similar, as respects war, to that which we have first described, while the settled nations around them were for the most part in that condition which has been secondly described. And yet it will be found that during this period the usages of the Hebrews were far above those of the first condition; but were in many respects equal to, and in some respects above those of the second condition—and this through the corrective which their religious system applied to the principles of warfare which naturally belonged to their condition.

During the period of which we now write, the Hebrews *had no interest* in preserving the lives of their prisoners. The conquest of the country being incomplete, they were themselves rather pressed at times for room; and their operations in agriculture and pasturage were of too contracted and simple a description to need more hands than the family and its natural dependants afforded. There was no market open to them in which they could sell their prisoners for slaves had they been so inclined. And as the nations with which they warred were their near neighbors, they could not employ them as



Egyptian War Chariots.

profit to themselves without affording them the means of escape. In short it was impossible that they could have kept them without incurring the cost of their maintenance, which no ancient nation ever did. Under such circumstances no prisoners were taken. Those who could, escaped; and those who could not, were slain, either on the field of battle or in the pursuit. In fact there were no surrenders or capitulations of bodies of men, no laying down of arms, by which prisoners are obtained in modern warfare. No prisoners were ever reserved to be tortured and slain in cold blood on some future occasion. It is true that one or two instances of prisoners being put to death after the act of warfare, do occur—such as that of the Midianites, recorded in Num. xxxi. 13–17, and of king Agag, 1 Sam. xv. 32, 33—but these were not preserved with the view of their being subsequently destroyed; but they were put to death because they had without authority been spared by the military commanders, although the nation had *before the battle* devoted them, by a solemn and irrevocable ban, to destruction—for reasons which were for that time considered good, and were such as would have led other nations to similar act of devotion.

In the case of those kings who were taken in the course of the battle, and were put to death *on the same day*, at its close, this can not be called cold blooded. It was a crowning act of triumph and vengeance, while the blood of the victors, maddened by the recent conflict, still boiled in their veins. At the worst, this was the most barbarous practice of the Hebrews in their most barbarous state; and was of far less atrocity than the acts toward their distinguished prisoners, of nations far in advance of the Israelites of these times, in general civilization—if

indeed there be any true civilization by which the heart is not civilized. Thus the heathen attributed, to some extent, the victories which they achieved to the might and blessing of their gods: therefore, in acknowledging the obligation to these gods, prisoners were, by some of them, preserved to be offered to these gods in sacrifice, on some high holyday; but from this, and from a hundred other barbarities connected with or arising from this form of acknowledgment, the Hebrews were precluded by the strict prohibition of human sacrifices, as a thing most abhorrent to Jehovah. Yet no nation was more perseveringly taught than the Hebrews that the glory of all their victories was to be ascribed to their Divine King; and this made the agents of these victories, the generals, judges, and kings, heedful that they might not seem to take too large a share of the glory to themselves, by ostentatious exhibitions of their triumphs. No royal and noble captives were dragged in chains at their chariot wheels; none were allowed to live on, to be paraded in distant cities to mark the triumph of the conqueror, and afterward ignominiously slain; none were ever blinded or mutilated by them, or exposed to mockery and insult; nor were any ever kept by them to grind in the prison-house, or to gather meat under their tables: not even Solomon in all his glory thought of the vulgar ambition of having dethroned kings among the menials of his house; and if "kings' daughters were among the honorable women" of his Egyptian spouse, they were given to her by her father rather than her husband, and, after all, they were "honorable [not degraded] women."

The custom among the Hebrews of slaying the kings of a conquered people upon the field of battle was, of only momentary duration. It had already so



Ancient Egyptian Soldiers.

far declined in the time of Gideon that he would have spared Zeba and Zalmunna had not they, by putting his brothers to death, rendered the case one of blood-revenge. And although Agag was put to death at a much later period, that was a peculiar case, to which we have already adverted. And after having relinquished this practice, they resorted to none of these intermediate barbarities of which we have spoken. Captive kings came to be treated with consideration and even kindness; and for the most part, when not slain in battle, were continued in the rule of their territories on the condition of paying tribute. The Hebrews also, within as short or a shorter time than any other people, ceased to wage exterminative wars. With an enlarged territory and increased means of employment, it became their interest to take and preserve captives for the sake of the services which they might render in the public works and in the fields. There may be exceptions, and examples of gratuitous barbarities; but what history is there, even modern history, in which such do not occur?

That the Egyptians were, in the period of which our history now treats, far, very far, above the Hebrews in all the arts of civil life, it would be very useless to dissemble or dispute. It has therefore occurred to us that we can not better conclude this notice than by showing that in this comparatively advanced state of that people, when captive labor had become valuable to them, they still retained barbarous war usages which were not known to the Hebrews in their most barbarous state, much less in

that more civilized condition which they afterward attained. The illustration derivable from this source is the more important, inasmuch as, from their long residence in Egypt they could hardly be unacquainted with the war-usages of that country, and the difference can not well be accounted for but by reference to the different circumstances in which they were placed, and the entirely different *principles* of their religion and government.

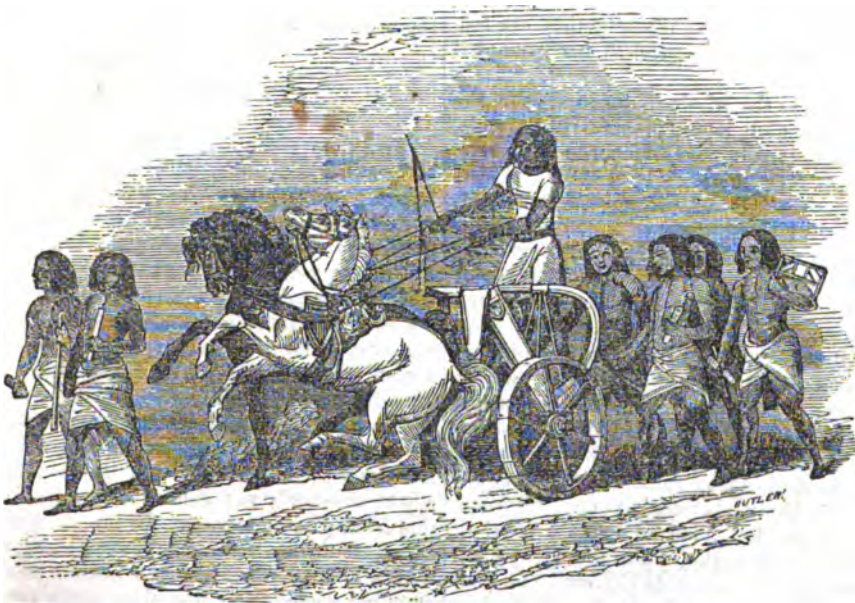
We are aware that Sir J. G. Wilkinson has thrown an obstacle in our way at the outset, by contending that all the barbarities which the Egyptian sculptures offer to our view are to be understood as allegorical, or as symbolical fancies of the sculptors. And why? Because he "can not suppose that the Egyptians, who surpassed all others in the practices of civilized life, were in the habit of indulging in wanton cruelty." Now we have the highest respect for the opinions of this gentleman on the subject of Egyptian Antiquities, which few persons living have studied with as much diligence or to as good purpose. But such a matter as this is one on which every reflecting person, acquainted with history and the principles of human conduct, is as competent as the most laborious student of Egyptian antiquities to form an opinion—perhaps more so, as being less likely to have his judgment distorted by that partisanship which is so often engendered by an exclusive study. So here, for one particular purpose—to redeem the Egyptians from a charge impossible otherwise to refute—a system of allegorical interpretation is

applied to the historical sculptures, which is calculated to have a most discouraging effect upon the whole study. One who believes these things to be allegories and symbols, can not deny that other matters may be the same; and this being conceded, what becomes of their value as historical monuments? and who shall draw the limit between the real and the ideal? There can be none. Every one will interpret that to be ideal which he does not like to believe real. The argument itself, on which this interpretation is founded, is of very little weight. The Egyptians may have been a very humane people among themselves; but their hatred of foreigners is historically known, and of course those with whom they warred, and whom they took captive, were foreigners. Besides, although the Romans also "surpassed in the practices of civil life," who ever thought of denying the wanton cruelties of which they were habitually guilty? The fact is that the true civilization of the heart has no inevitable connexion with or dependance on "the arts of civil life;" and we forget history if we think that it has. However, we will not argue the matter further; but, by the help of Dr. Richardson, who took things in their obvious sense, and of Sir J. G. Wilkinson himself before his allegorical explanations had been started, we will proceed to describe some of the scenes which the sculptures most abundantly offer.

An admirable representation of a battle-field is found on the walls of the pronaos of the great temple at Medinet Habou.—"The south and part of the east wall is covered with a battle-scene, and the cruel punishment of the vanquished, by cutting off their hands and maiming their bodies, which is performed in the presence of the chief, who has seated himself in repose on the back part of his chariot to witness the execution of his horrid sentence. Three heaps

of amputated hands are counted over before him, and an equal number of scribes with scrolls in their hands are minuting down the account. As many rows of prisoners stand behind, to undergo a similar mutilation in their turn; their hands are tied behind their backs, or lashed over their heads, or thrust into eye-shaped manacles, some of their heads are twisted completely round, some of them are turned back to back, and their arms lashed together round the elbows; and thus they are marched up to punishment." Now we are prepared to admit that Richardson has here taken rather too strong a view of the case. We believe with Wilkinson that the heaps of hands, tongues, and *other members*, counted by the scribes in the presence of the king, are taken from the slain enemies, whose numbers they serve to authenticate. However the particular manner in which the dead are mutilated for this purpose, does not say much for the humanity of idea among the Egyptians. There was no such practice among the Hebrews; and the not remarkably humane nation (the Turks), which has retained to our own day an analogous practice, does not go further than to cut off *the right ears* of the slain.

The strained and torturing postures, painful to behold, in which the prisoners are bound, seems to us, as it does to Richardson, a very unequivocal intimation of the inhuman manner in which the Egyptians treated their captives. Wilkinson allows that, "To judge from the mode of binding their prisoners, *we might suppose* they treated them with unnecessary harshness, and even cruelty, at the moment of their capture and during their march with the army. He also admits that the Egyptian hatred of foreigners might often lead the soldiers to commit acts of brutal severity, but excuses them by reference to the incidental brutalities of the armies of civilized Europe. This



Slaves attending a Chariot

excuse is as good for the Hebrews, and even better, as they were a less "civilized" people. But, in fact, the brutalities of the Egyptians were not *incidents* but *usages*. Nations do not perpetuate in marble the memory of incidental barbarities which they deplore; and that the Egyptians delighted in images of human suffering and tyrannic power over strangers, is proved by the multiplication of such images in every possible form,—not only in sculpture and painting, but as figured on their official dresses, and wrought in their ornamental furniture. Scenes of immolation figure on their thrones; and their more splendid chairs present, as supporters of the seat, the gilt or golden images of captives, bound in the most painful postures, with ropes around their necks. To the thinking mind this last circumstance will appear much more conclusive than many facts of much greater intrinsic importance.

The return after victory is represented in the continuation of the same historical piece to which the preceding observations refer: "The king returning victorious to Egypt, proceeds slowly in his car, conducting in triumph the prisoners he has made, who walk beside and before it, *three others being bound to the axle*. He arrives at Thebes, and presents his captives to Amunre and Maut, the deities of the city, who compliment him, as usual, on the victory he has gained, and the overthrow of the enemy he has 'trampled beneath his feet.'" The victorious king trampling upon the bodies of his conquered foes frequently occurs in such scenes; and so fond were the Egyptians of the ideas and images connected with this act, that they were wont to have the figure of a slave or captive wrought upon their sandals, that they might thus tread it under feet. Sandals thus figured have been found.

In some cases the king or chief alights from his chariot to bind with his own hand the chiefs he has conquered, and in others he holds himself the end of the rope around their necks whereby they are led, or rather driven, before his chariot in his triumphal march.

As a conclusion to the whole of these scenes, the hero slays with his club, in the presence of his gods, the principal captives who have fallen into his hands. That the mode of representation is in some respects symbolical, or rather *conventional*, must be admitted. For as the artists wanted space or ingenuity to intimate the number slain before the gods in any other manner, the captives are represented as bound together in one mass, all on their knees, with hands uplifted toward the inexorable hero, who, represented in colossal proportions, stands over them, grasping in one hand their united hair, while the other wields the uplifted club or battle-axe with which he seems about to demolish them all with one blow. A scene of this sort is repeated in every possible form. On one of them Dr. Richardson remarks, "The figure is that of a hero, finely sketched, young, vigorous, and colossal. In his left hand he holds a hatchet, poised in an attitude to strike, while the right hand grasps the hair of thirty miserable victims. To look at his countenance, it is placid and benign, and so far removed from the gathering blackness of cruelty,

you would say that with his hatchet he was going to hew asunder the fetters with which they were bound, and set them at liberty; but when you see the unfortunate wretches crouching and shivering under his arm you feel that nothing less than their destruction is intended."

Of course, endeavors have been made to explain away the obvious meaning of these groups. Mr. Hamilton thinks such scenes represent the punishment or destruction of Briareus, an opinion sufficiently refuted by the fact that a woman is included in one of the groups of this description: and it is admitted by Wilkinson that they are foreign captives, the names of whose districts and towns can be read off; but he nevertheless thinks they do not represent human sacrifices, but from a religious allegory, purporting to be an acknowledgment of the victory obtained by the assistance of the deity to whom the offering seems to be made. If so, this would be a curious method of expressing such acknowledgment; and a method, too, which would, at least, express the former existence, in a less civilized state, of the actual custom thus figuratively intimated. But we have, perhaps, said enough before about those allegorical interpretations: and even if we relinquished the illustration of our argument which is derivable from the scenes to which these considerations refer, there are others, to which this allegorical hypothesis has not been and can not be by any possibility assigned, which prove beyond question that the Egyptians did immolate human victims to their gods; and this being the case, it ceases to be worth the while of any one to contend that the groups which have engaged our attention do not represent the immolation of foreign captives to the gods whose favor was supposed to have given the victory to the conquerors. Undoubtedly the Egyptians made slaves of the mass of their captives; and we may conclude that those whom they selected for immolation were such as had been most active against them in the concluded war.

ECCENTRIC MORALS.

THE natural feelings are subject to many strange aberrations and depravities. The Negro of Soudan would probably pronounce the most beautiful lady at Almack's a fright, and point for the true standard of loveliness to some overgrown black Venus, the result of ten years of maternal cramming. The African gentleman's taste would be held by some to imply that the ideas of men on these points are all matter of habit or prejudice; but this would be rather a rash way of judging. The wonder may, we think, be accounted for by supposing that the faculty giving the sense of the beautiful has been in him dormant for lack of all that could excite or train it, and that habit and prejudice have only reconciled him to an object absolutely not calculated to be agreeable to this feeling in most men. In the same way, we conceive, some men become accustomed to swallow with a kind of relish, potions which to the bulk of mankind appear, and therefore really are, bitter and nauseous. The tale told of a king of antiquity, who,

by taking poison in little but gradually increasing quantities, came at last to be a mass diffusing death all around, while himself remained in good health, is, though evidently an exaggerated case, yet one generally consonant with what we know to be possible; otherwise how should Coleridge have been able to take a pint of laudanum in a day? There have even been appetites so depraved, that the mud of the streets became a treat—though, probably, in such cases, it is not the perversion of habit so much as the derangement of disease. It would not perhaps be more absurd to conclude from such instances that man had no natural election between a good joint and a lump of soil, than to suppose, because the Negroes admire ugly objects, that there is no *to kalon*, or absolute beautiful.

So it is with almost all the finer feelings of our nature. To observe the conduct of a mother in this country, one would suppose that the protection of the infant was a principle in no instance to be broken through. She seems to experience the bitterest agonies of alarm and distress, if the least danger of any kind threaten the helpless innocent that lies in her bosom. Here, at least, we would think, is a feeling which nothing on earth could corrupt or pervert. Yet, unfortunately, we know that the Spartans exposed deformed or sickly children, and that Roman parents had by their laws a right to do so; that the Mingrelians, a people who professed Christianity, were accustomed to bury their offspring alive, with the view perhaps of repressing population; and that the Chinese practise infanticide on a large scale. Such things, however, do not argue that there is no natural feeling dictating a love of, and care for the young, and that all these things are only matters of custom. They only, in our opinion, show that the feeling may be weak and comparatively dormant in some nations, as we know it to be in some individuals among ourselves, or else may be overpowered by some principle temporarily stronger. The Mingrelians and Chinese may be among those nations who have no great endowment of the faculty which gives the love of children; and, in the case of the Spartans, we all know that their regard to the public interest was sufficient in them to subdue the natural feeling, even on the supposition of its being of average strength and activity. It is worthy of remark, that the vivacity of this feeling does not absolutely depend on civilization; while the Chinese murder their infants, the Esquimaux, a much less enlightened people, are remarkable for an extreme tenderness toward them. Nor does this feeling always rise in proportion with the respectability of the lower animals; the felinæ and apes are perhaps the most philoprogenitive of all creatures.

Parental and filial affection are recognised as strong feelings among us, and it is difficult to imagine how a son could ever become an indifferent object to a father, or how a mother could ever regard the death of one of her stately striplings as even a tolerable, much less a pleasing event. Yet a Roman magistrate would coolly condemn his son to death for a state offence; and a Grecian mother was delighted to receive home, stretched on his shield, the life-

less body of the youth who had fallen fighting for his country. Aksoukor Bourschi, the Dispenser of Fortune, as he was called, a gallant prince of Mossul, fell a victim to the daggers of a fanatical sect whose creed recognised assassination as the most meritorious of all acts. The populace seized the murderers, whom, with one exception, they tore in pieces. The mother of the assassin who was spared hearing of the catastrophe, expressed the greatest joy, and dressed herself in all her finest attire, believing her son to have been killed in what she believed to be the best of causes. When she learned that the young man still lived, she blackened her face, and cut off her long flowing hair, the eastern signs of extreme wo. In all these cases, we see one principle overpowering another, the latter, however, being probably, in some of these nations, the weaker of the two naturally.

There can, we think, be no other rational way of accounting for those eccentricities as to morals for which some nations have been remarkable. Lycurgus, as is generally known, legalized theft, and only punished it when a blundering rogue was caught in the fact. He was so eager to make his people intellectually sharp, that this license did not seem too dear a way of effecting the object. So also the Grecian philosophers, in their anxiety to advance their national interests, not only sanctioned piracy, but held it to be laudable. The whole history of Greece is a remarkable illustration of the power of a sentiment akin to what we call public spirit, to extinguish the natural emotions of the individual bosom.

Even the instinct of self-preservation, so universally active, the mainspring of human action, has been, as we well know, overpowered by other feelings. The Hindoo devotee prostrates himself under the car of Juggernaut in a most contented and cheerful state of mind. The widow of the same nation, if left to her choice, in general would rather burn with her deceased husband than not. They think they are making a good bargain in so doing, and, firm in their faith, no qualm comes over them. The Highlander of old would gladly take the death-blow aimed at his chief, so that he could save that venerated person. Here the sacrifice was dictated by merely a habit of reverence, which made the chief's life seem preferable to his own. He contemplated no selfish advantage, but, on the contrary, made a pure sacrifice of self. Yet it was only one feeling, after all, overpowering another.

Our common notions respecting the destruction of a fellow-creature, in other circumstances than those of conflict, or for the purpose of self-defence, represent it as an act from which man instinctively revolts, and which, if it be unfortunately committed, is ever after a source of the most bitter uneasiness of feeling. We think of the murderer as haunted through life with horrible recollections, harassed by remorse, and suffering an expiatory death every day, until true death at length comes, amid unspeakable horrors, to close a scene which no one can look on without shuddering. It is, nevertheless, true that there are large bodies of people who practise murder without the experience of the slightest uneasiness either at

the moment or afterward. Such are the Thugs of India, of whom various well-authenticated accounts have been presented to the public within the last few years. They are a kind of sect, or set of religionists, who waylay and kill travellers for the sake of booty. "There is not a Thug," says Captain Sleeman, "who feels the slightest remorse for the murders which he may, in the course of his vocation, have perpetrated, or assisted in perpetrating. A Thug considers the persons murdered precisely in the light of victims offered up to the goddess; and he remembers them as a priest of Jupiter remembered the oxen, and a priest of Saturn the children, sacrificed upon their altars. He meditates his murders without any misgiving; he perpetrates them without any emotion of pity; and he remembers them without any feeling of remorse. They trouble not his dreams, nor does their recollection ever cause him any inquietude in darkness, in solitude, or the hour of death." How are we to reconcile the rule, in this case, with so large and every way so remarkable an exception? It is also to be remembered that there has been such a thing as a nation of assassins somewhat nearer to our doors than the Thugs; and that, within Christendom, religion has often been brought to bear either for the prompting of homicide or its justification. When Louis d'Orleans assassinated Jean Sans Peur in 1407, Jean Petit, a Norman Cordelier monk and doctor of laws, undertook to justify the act by *twelve* arguments in honor of the twelve apostles! The Smithfield fires were lighted, and the bell of St. Germain l'Auxerrois was rung, for the supposed glory of God. John Knox "spoke merrily" of the murder of Cardinal Beaton, and united himself to the murderers, although of the general character of that preacher there can not be a doubt that it included many noble points. We would have to write volumes instead of paragraphs, if we were to dip deeper into the annals of religious persecution; suffice it, in one word, to say that, from beginning to end, they show the natural feelings of humanity obscured by the predominance of other and depraved feelings.

The aberrations of the religious feeling itself are most extraordinary, and such as investigation would perhaps never exhaust. The first element of this feeling is unquestionably the principle of worship—and to what objects has worship been paid, from the ugly caricatures of humanity which some Asiatic nations set up as idols, to the Grecian Jupiter and Apollo, respective emblems of majesty and beauty—from the sacred cow of Egypt to the Lama of Thibet! Worship implies an object presumed superior to the worshipper; but these objects could never be rationally held superior to those who pay or have paid them reverence. Yet they were or are sincerely, devoutly worshipped. Between the true object, an Almighty Unseen Deity, and these substitutes of ignorance and delusion, what an interval! Yet still there can be no doubt that the veneration of men has been, and is, excited by such objects.

The sense of justice and truth is not less liable to depravation. Of truth, barbarous nations have scarcely a trace; of justice, they have very little. Some semi-enlightened nations, as, for example, the Chi-

nese, are scarcely any better in either respect. And even among the most enlightened nations, we find some odd ideas and practices. It is not assuming at all, but only stating a recognised fact, that there are scores of voters at almost every election, who can not see the least impropriety in selling their votes for a sum of money, and would be prepared to defend the act as one perfectly indifferent in all respects except with a regard to their own interest. Classes pursue their own interests, not only without the least regard to the interests of other classes, but in open defiance of them. We find each profession and set of men looking to some code of its own, which habit places above the decalogue in their estimation. A lawyer will use every effort to save from conviction the wretch who can not be allowed to continue in his career without the greatest danger to society; and a statesman will denounce a minister as a traitor to his country and an enemy to the laws, yet be ready next minute to protest that he only meant the charge in a parliamentary sense, and entertains not a thought injurious to the personal character of his opponent.

On attempting to analyze the various causes which produce aberrations of the natural feelings, we find reason to think that the following are the chief: There is, first, that condition of a feeling which we find in utterly savage tribes—a state in which it is either so small in positive endowment, or so ill developed, that it scarcely can be said to exist at all. Hence the African's admiration of fat black females—the unscrupulous destruction of children by some savage tribes—the veneration which many other barbarous nations pay to ugly blocks of wood or stone, as supposing them to be gods. In these cases we only see the blundering of a faculty as weak and aimless as the movements of a newly born animal. There is, next, a condition of a faculty little superior to the above, which is sometimes found in partially civilized nations; for example, the feeble state of conscientiousness among the Chinese. Here we may remark, that because a nation has made some progress, it is not to be supposed that all the mental faculties are, in it, to spring forward into one uniform degree of activity. There is not one partially enlightened race which does not show some striking deficiencies. A great deal of the short-comings which we wonder at in certain races are to be attributed to this cause. Next, we behold, in civilized nations, one feeling overpowered by another—as the family affections of the Greeks by public spirit, and their sense of justice by an anxiety to cultivate intellectual sharpness. The monstrous practices of Thugs, assassins, and persecutors, are to be explained by a consideration of the blinding effect of erroneous religious views. Absorbed in some delusive notions, these persons come to sink all considerations of justice and humanity, and are willing to commit any species of wickedness that a contemplated greater good may be attained. It is a great though common mistake to speak of such men as unacquainted with mercy; Philip II. of Spain, while conducting his atrocious persecutions in the Netherlands, sent bread and clothing to the people of Brussels suffering under a famine. The feelings are in their case only overcome by an extreme of fanati-

cism, against which judgment makes no appeal. Next, there are many aberrations which arise from interested and selfish views entertained by a great body of men. In that case, probably, a consideration that the object sought is for the benefit of many others besides one's self, reconciles many to the error, or is what makes it appear passable. Every one, too, feels his share of the responsibility so light, and is so supported in his error by multitudes around him, that he is encouraged to stand out in the bad cause. Finally, the peculiar arrangements which society takes, and the effects of laws and institutions, occasion many anomalous moralities, to which custom easily reconciles all the parties concerned.

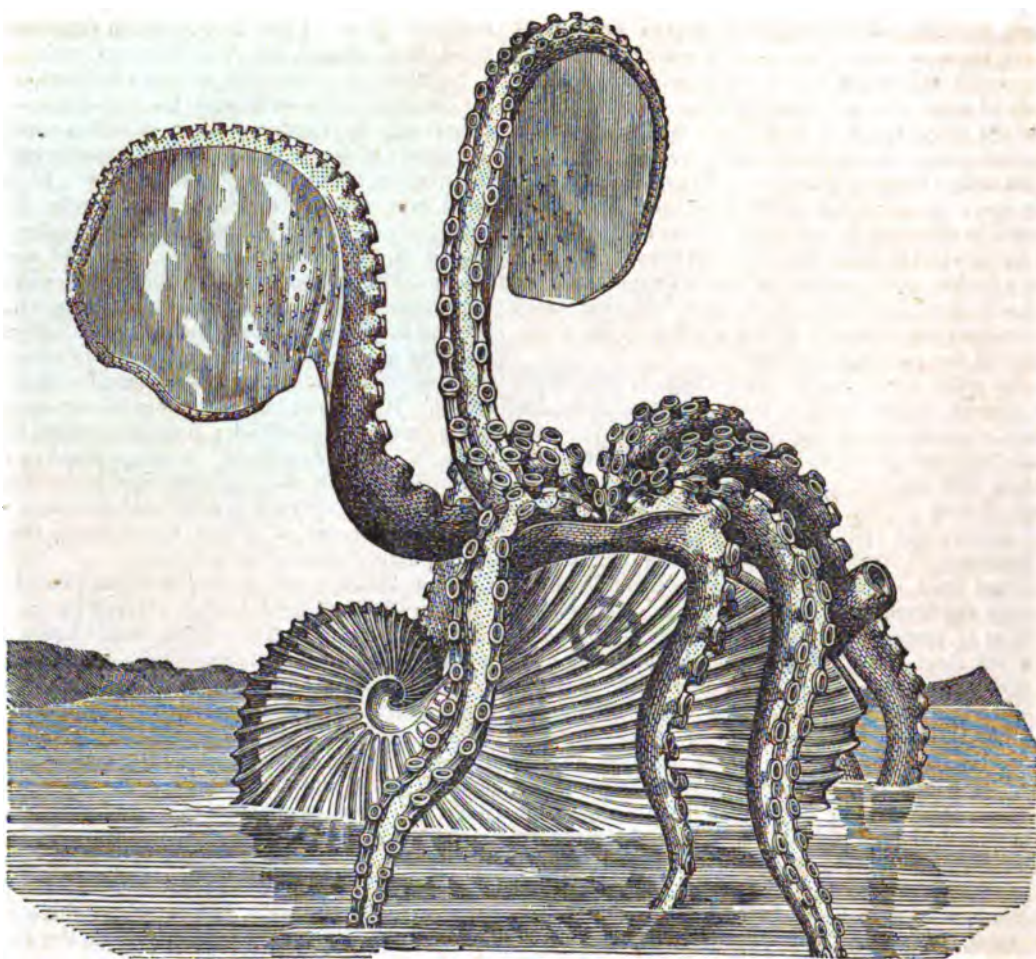
But while every one of the feelings is thus liable to appear, under various circumstances, dull, dormant, vanquished, or depraved, we are assured that such feelings nevertheless exist, by finding them all acting with vigor in some one or another of the children of men. That there is a feeling for the beautiful, Greece and Italy have amply proved. There is a fundamental feeling to pronounce thieving wrong, because most nations in the least removed from the savage condition pronounce it to be so. There is a feeling to protect the young, because, though some few kill them, the great mass consent in acting quite otherwise. There is a right humanity, because, while a few have been found to act mercilessly, and without remorse, the bulk of mankind are inclined quite the contrary way. All the peculiar morals, then, of which instances have here been given, are only eccentricities, or departures from a right code. The practical good to be deduced from the argument, is its giving us a light to detect the moral fallacies into which custom and prejudice are apt to lead us. It prompts us to look out beyond the narrow circle of local, temporary, and class morals, to see the operation of just principles in the great world. It is a common resource of the unjust and merciless to sneer at all standards of right and wrong, and take refuge from blame in the many examples of the aberrant and depraved. The more clearly that these can be established in their true character, as only exceptions from rules which the Creator has himself written in the human heart, the less influence, it may be presumed, will they have in seducing the easy and weak from the right path.

DREAMING.

How wonderful is this faculty of the mind! I write under the impression of recent experience, having retraced in a dream the beloved haunts of early years, expatiating, as I thought, to one who had never before seen them, on the various objects, mixture of orchard and garden ground. At one spot I paused—it was an old brick house, placed back in a neglected, overgrown shrubbery. That building I have not seen for nearly a quarter of a century, nor has any circumstance brought it to my remembrance. I never visited the inmates, but merely knew their name as

residents there. I had long forgotten that name, and stood, as it seemed, for a few moments, until enabled to recall it. I woke with a vivid recollection of all the minutiae connected with the old house—never remarkable for anything to me or others—and with the aspect of its former inhabitants portrayed with the liveliest fidelity to my mental view. In all this there was nothing extraordinary, merely because everybody has experienced something similar. Yet among the phenomena of mind, as acted upon by external circumstances, this faculty of receiving the impression of an indifferent object, retaining it through a series of years amid a multitude of after impressions—I may say burnt into it, such was the severity of the stamp—and restoring it on demand is most wonderful. It is a part of the mystery of our compound being that makes itself felt; it strikes a chord causing the whole heart to vibrate; it brings home to us the beautiful remarks of Chalmers, that every man has within himself his own peculiar and exclusive world, into the recesses of which the dearest, the most sympathizing friends can not enter.

There breathes not a mortal to whom I could unfold the long chain of recollections revived by the single idea of a passing dream. Some would listen, would try to sympathize, but, except by transferring the feeling to their own bosoms, and connecting with it their individual experience, no sympathy could they afford; nor would that be a real participation of my thoughts, but an awakening of their own. There is One to whom the desolate heart can turn with the deep and sweet conviction that He knows all. An awful consideration indeed, when we call to mind the innumerable transgressions that stand recorded together with those scenes and events; but to him who is in Christ Jesus, him to whom there is now no condemnation, being redeemed from the curse of the law, and brought nigh to a reconciled Father, it is thought full of heavenly consolation. The heart knoweth its own bitterness; God is greater than the heart and knoweth all things. If in his wise dispensations he has seen good to crush the flowers, and to suffer many thorns to remain, he knows the sweetness of the former, the keen points of the latter, and weighs in a just balance the burden that he has laid on his child. He does not, like our fellow-man make light of the sorrow, nor, like ourselves, view it in exaggerated proportions; but with the perfection of wisdom, knowledge, and tender compassion, "He knoweth our frame; he remembereth that we are but dust." It is astonishing with what soothing power a dream may come across a harassed mind, blunting the edge of the present with sweet remembrances of the past. And I should be slow to deny to the God of all consolation the praise due for his mercy. Those who, from a distempered digestion, or otherwise, are habitually oppressed by gloomy and terrific dreams, scruple not to pray against the visitation: why should they whose bosoms are soothed by visions of a very opposite tendency, hesitate to render thanks to the Giver, not only of the staff that supports our pilgrimage on the heavenward path, but of the little wild-flower that flings a breath of momentary fragrance across it?—*Charlotte Elizabeth.*



THE NAUTILUS.

WE are far from losing all that is beautiful or even wonderful, when we give up the fancies and vagaries of superstition; it is very often the case that "Truth is strange, stranger than fiction:" we no longer believe that mermaids, the bright and lovely and delusive queens of the sea, rise from their briny element, and pouring forth a strain of duclet music into the ears of the unwary wanderer on the shore, comb their waving ringlets, and smilingly beckon the stranger on to his watery doom. Credence no more is given to the existence of the bright halls of the sea-nymph, constructed in the depths of the sea, with more taste than architecture ever displayed, and more gorgeousness than ever lighted on the most magnificent temple. Although we discard these notions; as we resign them, we are met, upon investigation, by those which are perhaps more beautiful. We know that the bottom of the ocean is covered with innumerable treasures—shells the most lovely, and creatures the most curious, are there; and through the vast and ample domain there rest and reign formations of a more intricate and romantic character than the inventive fancy of man has ever conceived. The depths

of the sea are the abodes of mystery; we know not what may be in them—the various tribes which live, move, and breath there. Some, indeed, are brought to the surface, and made to pass the philosophic eye, but how small a portion of the ocean's marvels is thus revealed it is impossible for us to tell; the wild waves sweep over myriads which we never saw, and which, in all probability, are destined never to undergo human investigation. It is a singular fact that among the thousands of shells continually washed on the beach by the retiring waves, by far the greater part are without inhabitants, and never contain the animals supposed to reside in them, either dead or alive. They are usually considered to be washed out of them by the force of the under currents, and this is rendered probable, as they are met with in the greatest abundance at those places where currents from the deep sea form eddies. But we know not whence they come, neither do we know their habits of life. We are not even aware how far animal life extends below the level of the mean surface.

In some of the tropical seas we can observe the bottom peopled at a great depth, and in the coral reefs we find that molluscous animals, which are absolutely too small to be examined by the human eye,

even rear themselves "walls and bulwarks" miles and leagues in length, and to a height far exceeding the space to which our deep-sea plummets ever sound. But what of vegetation, or what of animal life in larger forms exist there, or it may be at a greater depth, we can not know, and it would be vain to conjecture. One of the most singular of these deep sea shells is the nautilus. It has been said that the most mischievous beings in the universe for touching subjects of natural history, are the poets and romancists, who contrive to fling the spirit of fable into almost every object with which they chance to come in contact; they have told a beautiful tale respecting the nautilus, and science has proved it to be partly true.

When the water is calm, say they, the nautilus rises to the surface, rears its masts, spreads its sails, stretches its oars, and walks the waters really a thing of life; but when the wind beats, and the waves are up, it takes in its sails, lowers its masts, and descends to the regions of tranquillity, where the action of the waves never reaches.

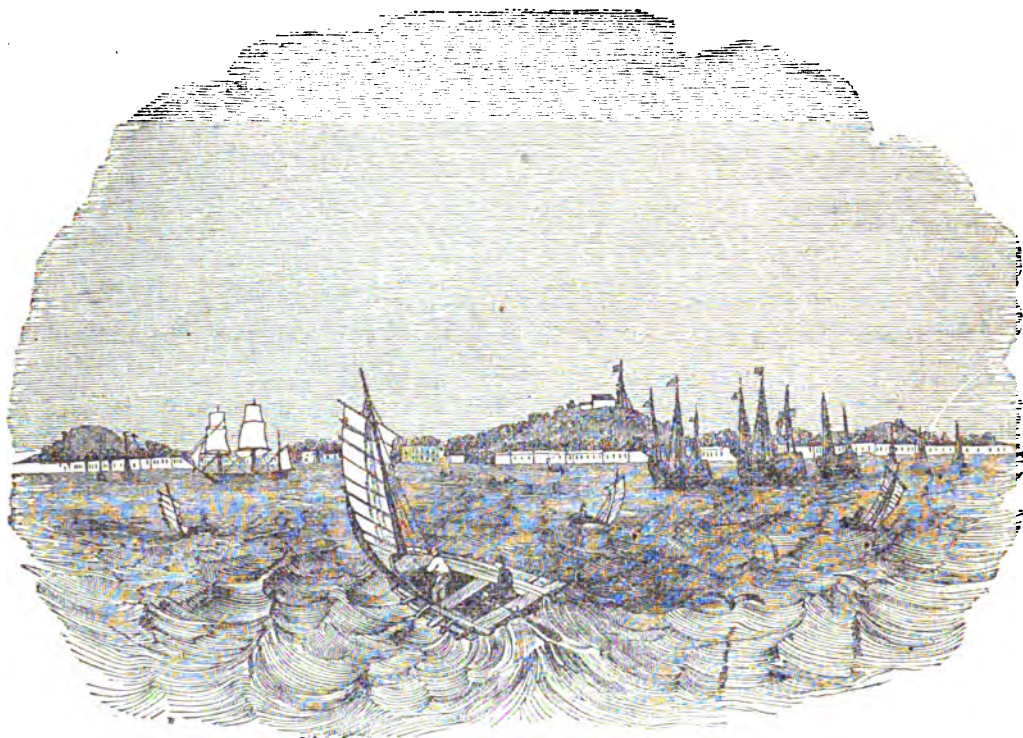
This romantic creation has called forth some of the most pleasing of our modern rhymes. The beautiful mythos was however supposed to be till lately quite untrue; the animal which is found in the shell is not the nautilus, and much conjecture has arisen in the minds of the observers of nature as to the character of the natural owner of the shell. This shell is a dead one, and the animal found in it has really no more connexion with it than that of the sailor with his ship, nay, not so much, because the sailor may have made and can repair the ship. There is only one author who says that he saw the living animal of one species of the nautilus, and as he had erred in some other matters, there is reason to suspect he is mistaken in this. The nautilus has within the last few years been made a subject of special theory by geologists. It has been found to abound, with other cephalopoda, in the tertiary strata, thus proving its ancient existence; and those which are found, in the septaria, or indurated argillaceous nodules of the London clay at Highgate, Sheppy, and Bognor, are said to possess considerable beauty, and admit of being cut into sections which display admirably the internal structure of the shell. Dr. Buckland has given a lucid account of the fish, whose shell we are now examining, which we shall condense and render as plain as possible to our readers.

The *Sepia*, or cuttle-fish of our seas, is of an oblong form, composed of a jelly-like substance, covered with a tough skin. The mouth, which is central, is furnished with horny mandibles much resembling the back of a parrot. The cuttle-fish, it is now known, has the power of secreting a black-colored fluid or ink, which it ejects when pursued, and by thus rendering the water turbid, escapes from its enemies. This fluid is contained in a bag, and enters largely into the composition of Indian ink. This brief description will enable us the better to understand the nautilus; in its shell we have a series of chambers pierced through the middle by a siphunculus or tube which extends to the remotest cell. The animal is of the nature of the *sepia*, and occupies the outer re-

ceptacle of the shell, having a membranous tube which lines the siphuncle.

The chambers are internal air-cells, and the creature has the power of filling the siphuncle only with a fluid secreted for the purpose, and of exhausting it, and the difference thus effected in the specific gravity of the animal and its shell enables the nautilus to sink or swim at pleasure. If, therefore, the reader can imagine a cuttle-fish in the outer chamber of the nautilus, with its arms extended, and having a tube connected with the siphunculus, but neither ink-bag, nor bone, these being unnecessary to an animal having the protection and mechanism of a chambered shell, he will have a tolerably correct idea of the recent and fossil nautili. The nautilus is essentially a ground-dwelling animal, feeding on the marine plants which grow at the bottom of the sea. Rumphius states that it creeps into the shell above, and that by means of its tentacula it can make quick progress along the ground. These shells are probably very numerous now; at one period of our world's history they must have been more so. Countless millions are found in the earth in many parts of England and other countries; and in the Himalaya mountains, on the northeast of India, they are met with at nearly four miles above the present level of the sea. Even there they have all the character of shells, which are never now discovered in any situations but where it is evident they must have been brought from deep water; the congregated multitudes must have been found in deep water too. These shells have drawn the attention of mankind in every age. The Hindoos considered them as the impressions of the god Vishnu, and worshipped them as holy. Among the Greeks and Egyptians they were the horns of Jupiter Ammon, whence they still retain the name of Ammonites, and they have given rise to several ornaments of the most elegant character.

WISDOM OF THE CREATOR EXEMPLIFIED IN HIS WORKS.—The various orders of vegetables provided in every part of the globe, for the countless forms of animated existence, are eminently illustrative of the provident care of the Creator, and show us how good and how great is the Father of the families of the whole earth. The sluggish cow pastures in the cavity of the valley; the bounding sheep on the declivity of the hill; the scrambling goat browses among the shrubs of the rock; the hen picks up every grain that is scattered and lost in the field; the pigeon, of rapid wing, collects a similar tribute from the refuse of the grove; and the frugal bee turns to account even the small dust on the flower. There is no corner of the earth where the whole vegetable crop may not be reaped. These plants which are rejected by one are a delicacy to another, and even among the finny tribes, contribute to their fatness. The hog devours the horse-tail and henbane; the goat, the thistle and the hemlock. All return in the evening to the habitation of man, with murmurs, with bleatings, with cries of joy, bringing back to him the delicious tributes of innumerable plants, transformed, by a process the most inconceivable, into honey, milk, butter, eggs, and cream.



View of Singapore.

SINGAPORE, OR SINGAPORE.

AMONG all the British possessions, none perhaps is more remarkable for its rapid growth, for the principle on which that growth has been developed, and for its present importance, than Singapore. If its commerce were limited to the produce of the place, it would hardly give employment to two or three vessels. But Singapore has become the London of Southern Asia and the Indian archipelago. All the nations that inhabit the countries bordering on the Indian ocean resort to it with the produce of their agriculture and manufacturing industry, and take in exchange such goods as are not grown or produced in their own countries. All of them find there a ready market, which at the same time is well stocked with European goods. This effect has partly been produced by the wise policy of declaring the harbor of Singapore a free port, in which no export or import duties, nor any anchorage, harbor, or light-house fees are levied.

The establishment of this oriental mart was effected chiefly by Sir Stamford Raffles, who saw the vast impulse which such a place of common resort would give to the Indian country-trade, as it is called, and his ideas have been fully verified. In 1819, when the British took possession of the islands, the population amounted to about 150 individuals, mostly fishermen and pirates, who lived in a few miserable huts; about thirty of these were Chinese, the remainder Malays. The first census was taken in 1824, and then the population amounted to 10,683 individuals. Since that period it has constantly been

increasing, and at the census of 1836 it was found to amount to 29,984 individuals. More than half the population were settled in the town of Singapore, which contained 16,148 individuals, of whom there were 12,748 males and 3,400 females. It is very probable that the population of the settlement now amounts to more than 36,000 individuals, which gives more than one hundred and thirty persons to a square mile, which is a considerable population even in a country that has been settled for centuries, and is certainly a very surprising population in a country which twenty years ago was a desert. The population is of a very mixed character; the following classes are enumerated in the census of 1836: Europeans, nearly all Britons; Indo-Britons; native Christians, mostly Portuguese; Americans, Jews, Arabs, Malays, Chinese, natives of the coast of Coromandel, Chuliahs, and Klings (Telingas); Hindostanees, Javanese, Bugis, and Ballinese; Caffres, Siamese, and Parsees; of these the Chinese and Malays are by far the most numerous. In 1836 there were 12,870 Chinese men, and only 879 women; of Malays there were 5,122 men, and 4,510 women. But these censuses do not include the military, their followers, nor the convicts, as Singapore is a place of banishment from Calcutta and other parts of Hindostan. The number of these classes of inhabitants may be estimated at about twelve hundred. The Europeans and Chinese constitute the wealthier classes. The Europeans are for the most part merchants, shop-keepers, and agents for mercantile houses in Europe. Most of the artisans, labor agriculturists, and shop-keepers are Chinese.

The Malays are chiefly occupied in fishing, collecting sea-weed, and cutting timber, and many of them are employed as boatmen and sailors. The Bugis are almost invariably engaged in commerce, and the natives of India as petty shop-keepers, boatmen, and servants. The Chuliahs and Klings are daily laborers, artisans, and petty traders. The Caffres are the descendants of slaves, who have been brought by the Arabs from the Arabian and Abyssinian coasts. The most useful are the Chinese settlers. A common Chinese laborer gets from four to six Spanish dollars a month, a Kling from three to four and a half, and a Malay from two and a half to four and a half. A Chinese carpenter will earn about fifteen dollars a month, a Kling eight, and a Malay only five. The emigration of the Chinese is much favored by circumstances. Among the dense population of China there are many paupers, who are a burden to the state, and the government connives at the poorer classes quitting the country, though it is contrary to their ancient laws. The poor Chinese leaves his country without a penny, and agrees with the captain of the junk to pay from eight to twelve dollars for the passage. On landing he enters into one of the secret societies, which are always formed by the Chinese, and the society pays the passage-money, and engages his services. In three months he has generally paid his debt, and then he begins to make his fortune. The Chinese emigrants at Singapore and Penang are mostly from Canton, Macao, or Fokien. Many of those of Fokien become merchants, and show a strong propensity to speculate largely. The Canton emigrants are the best miners and artisans.

The territories of this settlement embrace a circumference of about a hundred miles, including the seas and straits within ten miles of the coast of the island of Singapore, and they lie between $1^{\circ} 8'$ and $1^{\circ} 32'$ N. latitude, and between $103^{\circ} 30'$ and $104^{\circ} 10'$ E. longitude.

The island of Singapore occupies about half the space between the two capes with which the Malay peninsula terminates on the south, Capes Buru and Ramunia (commonly called Romania). It has an elliptical form, and is about twenty-five miles in its greatest length from east to west, and fifteen in its greatest width. It contains an estimated area of about two hundred and seventy-five square miles, and is about one third larger than the isle of Wight. It is divided from the continent of Asia by a long and narrow strait called Salat Tabrao, or the old strait of Singapore. This strait is nearly forty miles long, and varies in width between two miles and a quarter of a mile. At its western extremity, near the island of Marambong, it has only a depth of two fathoms and a half, but farther east it is nowhere less than five fathoms deep. The strait was formerly navigated by vessels bound for the China seas; but the advantages which the straits of Singapore offer for a speedy and safe navigation are so great, that the Salat Tabrao has not been used since the straits of Singapore have become known. The last-mentioned strait extends along the southern coast of the island, and the most navigable part lies within the British pos-

sessions. It is the high road between the eastern and western portions of maritime Asia.

The surface of the island is gently undulating, here and there rising into low rounded hills of inconsiderable elevation. The higher ground rises in general not more than a hundred feet above the sea; the highest hill, called Bukit Timah, which is northwest of the town, but nearer the northern than the southern shores of the island, does not attain two hundred feet. The shores of the island are mostly low, and surrounded by mangrove-trees. In a few isolated places low rocks approach the sea, chiefly along the Salat Tabrao. In several places, however, the coast is indented by salt creeks, which sometimes penetrate into the land three and even five or six miles. When the island was first occupied by the British, it was entirely, and is still for the greater part, covered with a forest composed of different kinds of trees, five or six of which are well adapted for every object of house-building. The soil of the interior is composed of sand and of clay iron-stone, mixed up with a large portion of vegetable matter, which gives it a very black appearance. There is a general tendency to the formation of swamps. Rivulets are numerous, but they are of inconsiderable size. Their waters are almost always of a black color, disagreeable taste, and peculiar odor, properties which they appear to derive from the peculiar nature of the superficial soil over which they pass, which in many parts resembles peat-moss. The water, however, drawn from wells which are sunk lower than the sandy base, is less sensibly marked by these disagreeable qualities.

The climate of Singapore is hot, but equable, the seasons varying very little. The atmosphere throughout the year is serene. The smooth expanse of the sea is scarcely ruffled by a wind. The destructive typhons of the China sea, and the scarcely less furious tempests which occur on the coasts of Hindostan, are not known. The tempests of the China sea, however, sometimes occasion a considerable swell in the sea, and a similar but less remarkable effect is produced by a tempest in the bay of Bengal. It is only in this way, and as it were by propagation, that the sea is affected by remote tempests, and their effects are particularly remarkable in the irregularity of the tides, which at times run in one direction for several days successively, and with great rapidity. In the numerous narrow channels which divide the smaller islands, their rapidity is sometimes so great that it resembles water issuing through a sluice. The regular and periodical influence of the monsoons is slightly felt, the winds partaking more of the nature of land and sea breezes. To these circumstances must be attributed the great uniformity of the temperature, the absence of a proper, continual, and periodical rainy season, and the more frequent fall of showers. Few days elapse without the occurrence of rain. According to an average of four years, the number of rainy days was one hundred and eighty-five, and that of dry only one hundred and eighty. The greatest quantity of rain falls in December and January, and the smallest in April and May. These rains keep the island in a state of perpetual verdure.

The thermometer ranges during the year between 72° and 88°. The mean annual temperature is 80.7° of Fahrenheit. In the four months succeeding February it rises to 82.50°, and in the four months succeeding October it sinks to 79°. The daily range of the thermometer never exceeds ten degrees. Crawford states that the climate of Singapore is remarkably healthy, which he attributes to the free ventilation that prevails, and to the almost entire absence of chilling land-winds, but Newbold thinks that it is not so healthy as Malacca, and he ascribes this to the less regular alternations of the land and sea breezes.

Singapore is not rich in agricultural productions. No part of it was cultivated when the British took possession of the place, and at first the soil was considered ill adapted for agricultural purposes. But it now appears that considerable tracts near the town have been cleared by the Chinese, and that this industrious people have succeeded in cultivating different kinds of fruits and vegetables, rice, coffee, sugar, cotton, and especially pepper and the betel-vine (*piper siriboa*). Only the summits of the higher grounds are barren, but on their slopes and in the depressions between them the soil frequently has a considerable degree of fertility. Tropical fruits succeed very well, such as the mangusteen, pine-apple, coconut, orange, and mango. The mango is found wild in the forests. The tropical vegetables, as the egg-plant, different kinds of pulse, the yam, the batata, different varieties of cucumber, and some others, grow very well, but the climate is too hot for most European vegetables. The produce of the paddy-fields, as well as of the orchards, is far from being sufficient for home consumption, and accordingly large quantities of rice are imported from Sumatra and Java, and fruits from Malacca.

The animals of Europe have been introduced, but most of them are few in number, as pasture-grounds are scarce. The Chinese, however, keep a great number of hogs. None of the large quadrupeds of the continent of Asia, such as elephants, rhinoceroses, tigers, and leopards, are met with on the island, but there are several kinds of monkeys, bats, and squirrels; also the *ictides*, the porcupine, the sloth (*bradypus didactylus*), the pangolin, the wild hog, and two species of deer, the *moschus pygmaeus*, which is smaller than an English hare, and the Indian roe (*cervus munjac*). Sometimes the dugong (*halicora dugong*) is taken in the straits. It is ten or twelve feet long, and the flesh is considered for flavor and delicacy not inferior to beef; the skin is as strong as that of the hippopotamus. Birds are numerous, especially different kinds of passerines, climbers, and waders, particularly the first, which are remarkable for their novelty and beauty. Tortoises are common.

The coral reefs and the shoals in the vicinity of Singapore furnish that delicate fern-like sea-weed called aggar-aggar (*fucus saccharinus*) in abundance, and it forms an article of considerable export to China, where it is used in thin glues and varnishes. It is made into a very fine jelly by Europeans and the native Portuguese. The average annual produce is

6,000 peculs, or 7,980 cwt., and it is sold at three dollars the pecul.

The town of Singapore stands on the southern shores of the island, in 1° 17' 22" N. lat. and 103° 51' 45" E. long., on a level and low plain of inconsiderable width, fronting the harbor. It extends about two miles along the shore, but only a thousand yards inland, where it is enclosed by hills from a hundred to a hundred and fifty feet high. The commercial portion of the town occupies the most western extremity, and is separated from the other parts by a salt creek, called the Singapore river, which is navigable for small craft. A good wooden bridge connects it with the eastern part, which contains the dwellings of the Europeans, the public offices, and the military cantonments. Contiguous to this portion of the town is the government-house, which is built on a hill. The most eastern part is occupied by the sultan of Johore, the Malays, and Bugis. The whole of the warehouses, and all the dwelling-houses in the principal streets in their vicinity, are built of brick and lime, and roofed with red tiles. The more distant dwelling-houses are built of wood, but roofed with tiles. It is only on the distant outskirts of the town that there are huts with thatched roofs. The Malays and Bugis live in huts. The population (16,148 individuals) consisted, in 1836, of 8,233 Chinese, 3,617 Malays, 2,157 Chuliah and Klings, and the remainder was made up by Javanese, Bengalese, Bugis, native Christians, and Europeans. Ships lie in the roads of Singapore at the distance of from one to two miles from the town, according to their draught. With the assistance of lighters, cargoes are discharged and taken in with scarcely any interruption throughout the year. The lighters convey the goods to the river of Singapore, where they discharge them at a convenient quay, and at the door of the principal warehouses. There is no want of common artisans. The Chinese follow the occupations of shoemakers, bakers, butchers, blacksmiths, gunsmiths, goldsmiths, and carpenters; they also manufacture pearl sago on an extensive scale, for the European and American market, the material being obtained from the island of Sumatra. They also employ a great number of forges, in which native arms and domestic and agricultural implements are made. These latter articles are mostly sent to the settlements of the Chinese on the islands of the Indian archipelago.

The principal public buildings at Singapore are the government-house, a court-house, a jail, custom house, mission chapel, and the Singapore institution. Sir Stamford Raffles formed a very extensive plan for this institution, which, however, has not been carried into effect. At present it consists of three schools, English, Malay, and Tamul, and the number of scholars amounts to upward of seventy. A Chinese school on a large scale was contemplated in 1837, and has probably been opened. Some Chinese youths are to be admitted as students, to reside at the institution, and to receive instruction both in English and Chinese for four or five years. There are several native schools in the town.

The effect of the policy adopted in the establish-

ment of a free port in this settlement became immediately apparent. In the first year, the exports and imports by native boats alone exceeded four millions of dollars, and during the first year and a half no less than 2,889 vessels entered and cleared from the port, of which 383 were owned and commanded by Europeans, and 2,506 by natives; their united tonnage amounted to 161,000 tons. In 1822 the tonnage amounted to 130,689 tons, and the total value of exports and imports to upward of eight millions of dollars. In 1836 the number of ships entered inward was 539, the tonnage 166,053; ships outward 533, tonnage 165,417. This statement, however, does not include the native craft, which are largely used in the intercourse with Sumatra, the Malay Peninsula, Rhio, Borneo, and the neighboring islands, and which in 1836 amounted to 1,484, of 37,521 tons, giving a total amounting to 203,574 tons entered at the port in that year. If the Chinese government continue the vexatious restrictions on commerce at Canton, it may be expedient to discontinue the direct commercial intercourse with the Celestial empire. Instead of Canton, the settlement of Singapore would be the market to which tea and other articles of Chinese industry would be brought, and our goods adapted for their consumption would be sold. The consumption of all these articles, with the exception of opium, would probably be much increased by such a change, for the Chinese themselves would be able to sell their goods at a less price at Singapore than has hitherto been paid for them at Canton. Vessels and merchants have to pay very heavy dues, while Chinese vessels pay very little in comparison, and are almost entirely free from dues whenever a part of their return cargo consists of rice. This article is at present always to be had at Singapore, and might be grown to an indefinite extent in the eastern districts of Sumatra and in the Tenasserin provinces, if there was a demand for it. Thus it is probable that the Chinese junks would be able to sell tea and other articles at least 10 per cent. less than is paid for them at Canton; besides, the tea is brought to Canton by a transport over land of many hundred miles, while the countries in which it grows are near the sea; and it could be brought directly from Amoy, Ningpo, and Sanghae, to Singapore, at a much less expense. The only difference would be, that vessels, instead of proceeding to Canton, would stop at Singapore; but that can hardly be considered a loss, when we reflect that the increased consumption of Chinese goods, in consequence of the decrease in price, would certainly be attended by an increase of shipping.

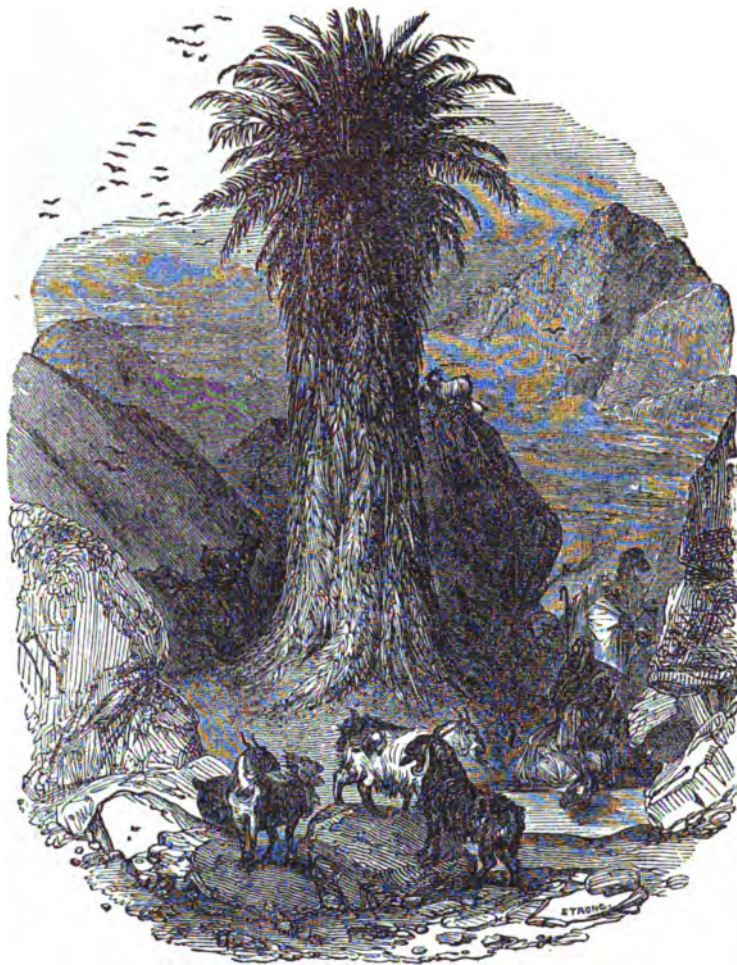
ON THE VARIATIONS IN THE WEATHER.

THERE is scarcely any one subject upon which mankind displays more short-sightedness and inconsistency than they do upon the weather. When exceedingly fine and pleasant weather cheers us, and makes all things around us seem doubly beautiful, we are almost sure to exclaim that we wish such weather could last for ever!

In exclaiming thus we consult only our feelings; and leave our interests wholly out of consideration. It would undoubtedly be very delightful to bask in eternal sunshine, and be fanned by perpetual zephyrs. But though this uniform pleasantness of season would be very agreeable to our feelings, would it be equally serviceable in maturing those various productions of nature from which we derive nourishment while we are in health, and mitigation and cure when we are diseased? Many of the most valuable of our articles of food, and of our medicinal roots and shrubs, owe their perfection to weather which is as little soothing as possible to our taste and feelings. The comparatively valueless beauties of the hot-house would grow wild and untended in all parts of the world were the weather always alike and everywhere mild. But we should pay dearly for those beautiful plants and flowers did we sacrifice for them the less comely but more serviceable alimentary and medicinal productions of the field and garden. If an equal temperature were perpetually kept up in all places, and during all times, two thirds, at least, of our natural productions would disappear from the world. Instead of each nation and each country possessing something peculiar to itself and valuable to all, all nations would both possess and be destitute of precisely the same number and kind of articles. To say nothing of the deplorable state to which mankind would be reduced were they deprived of the largest portion of the valuable things which they now enjoy, this condition of things would put an instant and inevitable end to commercial intercourse between distant people. We, as well as the natives of Hindostan, should have spices, but we should be destitute of those articles which we now have in such abundance, that over and above supplying our own wants, we are enabled also to supply those of the dusky denizens of the East.

Moreover, the most terrible consequences would result from an equalization of the earth's temperature. Those wild and rustling winds which we so much complain of, and which mainly arise from the different temperature of different portions of our globe, would cease, indeed, to annoy us with their howling rudeness. But what would be the effect of the consequent stagnation of the air? Why, instead of being the most refreshing and the most healthful minister to our health and comfort, it would become putrefied. We could not avoid inhaling it, yet to inhale it would be instant disease and speedy death. No art, no precaution, no exertion, could avert a terrible and universal pestilence, in which men and animals alike would perish without hope of escape, and without alleviation of their terrible and fatal agonies.

How very little reflection suffices to show us how thoughtless and short-sighted we mortals are; and how wise and benevolent is that Omnipotent Being who knows what we need better than we ourselves do, and who makes all things work together for our good! We can not turn our attention to a single subject without rejoicing that we have God to watch over us, and protect us against the silliness of our own wishes, and the selfishness, the unwise selfishness, of our own hearts.



Date Palm Tree.

ORIENTAL VEGETATION.

IT is one of the sweetest employments in which the human mind can engage, to turn itself attentively to the beauties which spring beneath our feet in the garden and in the field, and turn an attentive glance to those giants of vegetable life which supply to man so many of the comforts and luxuries of life. Botany is itself one of the most beautiful—perhaps the most beautiful—of the sciences; in its every feature are the lineaments of loveliness; the sweetest and softest petal of the brightest, and most beautiful flower is lovely; and the bark of the old tree, if examined through a glass, will show a loveliness too. Botany may be studied in all seasons, and in all seasons seen to advantage: in winter, when the crocus and the snow-drop smile in their meek brilliancy, amid snows and chilling storms; in summer, when the rose and the lily court every eye; in spring, when buds and blossoms, “bright as stars, and tremulous as tears,” sparkle on every tree; and in autumn, when the brown russet tints all the foliage, and breathes a deepening solemnity emblematic of the season.

Asia contains many of the finest gems of botanical science; it has with botanists six divisions: 1. The Siberian region; the excessive cold of this district is a barrier to vegetation, yet here in the summer may be seen forests of the birch, the pine, the larch, the balsam, and the beautiful rhododendron, both purple and yellow. 2. The Tartaric region; here we have ash, hazel, cypress, oak, and poplar. With these two divisions we shall have nothing to do, but pass on to take within the limits of this article, although not strictly oriental, all the vegetation of the four remaining districts. The Cashmerian region is a land of overflowing beauty; the most interesting part of the floral world seems to be collected there—most of the fruit trees now cultivated in Europe attain an excellence of which we have no conception. The vine spreads widely, and gains a luxuriance to which we are total strangers; the plane tree and horse-chestnut tree there grow wild; corn, rice, and vegetables of the most important description, flourish spontaneously in the fields. The Singhara nut is an object of very general cultivation, especially in the lakes which surround the city of Cashmere. One lake alone is

stated by Moorcroft to produce from 99,000 to 108,000 ass-loads of this nut, and about 30,000 people are wholly supported by it for five months out of twelve. Nothing is more remarkable in Cashmere than the floating gardens, formed from the entangled stems of water-lilies covered with earth and planted with melons and cucumbers, which thus treated arrive at the highest state of perfection, and are produced in great numbers. The prangos is a kind of umbelliferous plant, and is collected in some parts for the sake of the leaves, which when dried, furnish a fodder much esteemed for sheep. The saffron crocus, too, is a plant which arrives at a great size, and is the source of considerable revenue. Among oriental nations the palm was held in great veneration; by the Hebrews it was especially regarded; it was indeed the symbol of the nation, and the Romans considered it as such. Vespasian and Titus, in commemorating their victories over the Jewish people, emblemed it by a triumph over the palm. In the medals of Domitian and Trajan we find the palm used as a symbol, and on the well-known medal issued on the destruction of Jerusalem, we find Judea sitting and weeping beneath her palm. Alas! the palm is now an emblem of Judea,—the glory of the land is gone, and the glory of the palm is gone; that which flourished when Judea was great and glorious, droops when the nation languishes, and fades. Palestine is not now a land of the palm. Such extensive plantations of this noble and generous tree as are found adorning

and blessing the plains of Egypt and the borders and oases of the North African and Arabian deserts are nowhere found blessing the sterile barrenness of Palestine. There were two kinds of palms known to the Jews, the doum palm and the date palm: the former is that generally alluded to in their writings; the latter has always abounded, and still abounds in Egypt. The date palm, though some of the family are more majestic, is still a beautiful tree; the stem of it shoots up in one cylindrical column to the height of fifty or sixty feet, without branch or division, and with the same thickness throughout its whole length; when it attains this height its diameter is from a foot to eighteen inches. From the summit of this majestic trunk it throws out a magnificent crown of leaves, which are equally graceful in their formation and their arrangement. The main stems of these leaves are from eight to twelve feet long, firm, shining, and tapering, and each embraces, at its insertion, a considerable part of the trunk. The trunk of the palm is, in fact, made up of the remains of leaves, the ends of which are prominent just under the crown, but more obliterated toward the root of the tree; the bottoms of these leaves are enveloped in membranous sheaths or fringed with very tough fibrous matter; these leaves are pinnated, or in the form of feathers, each leaf being composed of a great number of long narrow leaflets, which are attenuated and of a brightly green; near the base of the tree these leaflets are often three feet long, but even then they are not one inch in breadth neither do they open flat, but remain with a ridge in the middle, like the keel of a boat. When the leaves are young, they are twisted together and matted up with loose fibres, which open and disperse as the leaf expands. The young leaf is also armed at the extremity with a long back spine or thorn; they are more stiff and firmer than the leaves of any other tree. The fibrous character of the stem, composed of the roots of leaves, renders the trunk useless as timber (indeed it can not be called timber), but very valuable for other purposes. The character of the wood of palms has lately been an object of attention, and a communication from Mr. Gardner on the subject, residing in Brazil, was read at the meeting of the British Association. By making a vertical section of a palm four inches in circumference, Mr. Gardner traced very plainly woody fibres proceeding from the base of the leaves to the centre of the stem, at an angle of 18° ; they then turned downward and outward to within a few lines of the external cuticle of the stem, running parallel with its axis; the distance between these two points being about two feet and a half, the fibres were traced quite distinctly up to the centre of the leaf. In answer to questions proposed by Professor Lindley, the author further stated, 1. That the wood of palms was always hard and compact outside, gradually getting softer toward the centre, the fibres of the upper leaves not descending to so great a depth as the lower. 2. The wood is much harder at the bottom than any other part of the stem, the inhabitants of tropical climates using only this part for economical purposes. It should be observed that the lower parts of the crown droop and wither every year, and are cut off



Doum Palm.



Cluster of Ripe Dates.

at the base in such a manner, that the stumps left upon the trunk from the base to the leafy top give the stem a remarkable appearance, and have the advantage of serving as steps to enable persons to ascend the summit, which would otherwise be a very difficult enterprise. This ascent is necessary not only to lop the decayed leaves and gather the fruit, but to impregnate the fruit-bearing tree, for the date palm is a dioecious tree, having the male flowers in one part, and the female or fruiting ones, in another; the male tree bears no fruit, and that of the female would be abortive without communication from the flowers of the male; the distinction has been known and acted upon from the most ancient times in Africa and the southwest of Asia; and Scott Waring suggests that it is from neglect of this that none of the palms of India bear fruit. We notice this chiefly as furnishing a reason beyond the mere elegance of form, for the name of the date palm, *Tamar*, being used by the Hebrews as a proper name for females, and apparently a very common one, for of the few women whose names occur in Scripture, two bear this name, —the daughter-in-law of Judah, and the sister of Absalom.

We have given this long description of the palm, because in the mind it associates itself with so much that history consecrates—the triumph and the glory of the conqueror, the lay of the bard, and solemn funeral procession; because too it associates itself with humanity, and the eastern members of our race derive from it advantages so important to their happiness.

To take a cursory glance at the various phenomena of oriental vegetation will now be our province.

Arabia, as all eastern traders well know, is divided into three districts: Arabia Petrea, Arabia Deserta, and Arabia Felix, or Happy; the last name is derived from the exceeding fertility of the soil. The gardens are perfumed by spices of the most delicious odor; here spikenard, cinnamon, cassia, cardamons, and pepper, abound; here the *cesalia* luxuriates; it does not confine itself to the fields, but overhangs the mountains, forming hanging gardens and fields. Coffee, various esculent plants, and wheat, are planted there. Forests of fruit trees rise also upon the mountains and adjacent valleys; the refreshing fig, the odorous *kenra*, the medicinal *cattua*, grow there in abundance. In the regions of independent Persia, the beauties of luxuriant vegetation are likewise fully seen. On the shores of Beloochistan, the date, the pride of India: the banana, the temple of religion; with the sycamore, the tamarind, with the oriental palm, reach their utmost magnificence. In the valleys adjacent, the mulberry, pistachio, pomegranate, vine, walnut, and quince, peach, apricot, almond, cherry, and currant, are to be found. Cashmere has been celebrated by every oriental poet, and every poet who has sung of orientalism, for its chilly plains, and if the expression may be tolerated, in its barren beauty. And there must be much beauty in wandering to the south of the Indian Caucasus; at its base, through the famous towns of Casne and Peshawer, where numerous rivers unite their streams, and carry fertility on their every wave, fringed with the willow and tamarinds; rising to a sublime height of thirty or forty feet, they sweep on over their golden sands. Far in the distance rise villages which the eye can not perceive; hid by the mighty forests of

the orange and the date, whose bright verdure outlasts the winters of those climes, and seem to live in a perpetual spring. Hindostan, properly speaking, is not considered as within the range of orientalism; but the features of their vegetation are strikingly similar; it presents a series of the most singular vegetable substances to be found perhaps in the world. The cotton tree is in the East Indies extensively cultivated; so much so, that in 1818, 67,456,411 lbs. were imported into Great Britain. The sugar-cane finds here one of the principal seats of growth. Indigo is a staple article of the East Indies, and one of the most profitable of cultivation in all Hindostan. The cajuput oil is obtained from the East Indian shrub, *melalucca leucadendron*, so famous for the preservation of subjects of natural history. Caoutchouc, or India rubber, is the inspissated juice of the several species of the *ficus*, and likewise of the *urceola elastica*, or elastic gum, vine, sandal wood, the bamboo. The Still Lakes, abounding with curious aquatic plants, are all among the wonders of Oriental and Eastern vegetation; and all bright glories of the vegetable world there seem to indicate how worthy such a district must be to receive the first breezes which floated over the world, and the first beams which streamed from the skies.

THOUGHTS ON ART.

BY J. MAOEN.

"These polished arts have humanized mankind,
Softened the rude, and calmed the boisterous mind."

WHILE we are constantly hearing so much about the wonderful revolution that is going on in the world in consequence of the rapid advancement of the physical sciences, and of the useful arts, a few words in relation to some of those arts which are too often looked upon as purely ornamental, may not, perhaps, be wholly uninteresting. That these arts are not merely ornamental, however, is a proposition, the truth of which we shall not waste time in attempting to prove. For that they always have been, and ever must be, a powerful agent in promoting the cause of civilization and refinement, no one who has paid to the subject the attention which it deserves, can seriously question.

How little are even the greatest minds aware of the importance of the results which may follow from the mere expression of their opinions? How often have the ideas of one man, transmitted to us through the medium of the pen, the pencil, or the chisel, given character to a people for ages?

Two thousand years have elapsed since Phidias flourished, and of his most valued works, not a vestige remains.

The master-pieces of Grecian painting perished centuries ago; and all that history has transmitted to us of the painters themselves, is little more than a mere catalogue of their names, with now and then an anecdote or an incidental notice of some of their works. Yet who can tell how much even this im-

perfect account of ancient painting has done, and is still doing, toward creating and keeping alive a taste for the beautiful in nature and art?

Nor are the thoughts even of those great masters whose works have perished, entirely lost to us. In every one of the works that have come down to us of his successors, we have some of the ideas of Phidias, modified no doubt by him who made the statue. By these works, too, we may no doubt judge pretty correctly of the degree of perfection to which the art of painting was brought by the ancients. Thus the great masters of ancient Greece are living and teaching still. They gave lessons to the great masters of modern Italy. They are teaching us as they taught their contemporaries; and it is doubtful if they ever exerted a greater influence than they do at the present time.

The same may be said of those artists of more modern date, usually styled the old masters. Never were Raffaele, Angelo, Corregio, and the others who form that splendid galaxy of art of which Italy is so justly proud, more carefully studied, or more devoutly worshipped than at present. That much of the homage paid them is justly their due, we unhesitatingly admit. But is there not a danger of carrying our adoration too far? Surely *nature*, not the old masters, should be our standard. They were but men with judgments erring as our own, and were no doubt mistaken in many things. That we should study them carefully no one will dispute; but we should accept of their assistance no further than may be necessary to aid us in our search after truth. The advice given by the painter Eupompus to Lysippus the sculptor, is no less worthy of attention now than it was at the time it was given. Upon the latter inquiring of the former, which of his predecessors, in the art of sculpture he should propose to himself as a model and master, "No man in particular," was the reply, "but study nature herself." Lysippus followed this advice, and the fact that he became the favorite sculptor of Alexander the Great, sharing with Apelles the friendship of that monarch, goes far to show that he did not act unwisely.

Byron remarks in one of his letters, that Rome is full of young painters, wearing their hair long, and dressing to imitate Raffaele, and says if they would try to paint like Raffaele, it would be more to the purpose. Did they but study nature as he studied her, and with his assistance, it would be better still.

Claude Lorraine had no other *Claude* to copy from, but having mastered a knowledge of the colors, nature was the only model which he needed, and here he studied attentively. Raffaele studied the works of Angelo and the other great masters of his time, no doubt to his profit. Yet he did not *imitate* them, he did not paint *like* them. Had he done so he would have remained their inferior. Since he and his great contemporaries have been set up as models, no one, we are told, has ever approached them. And if this be so, is it not because we are in the habit of judging nature by these masters, instead of making nature the standard by which they are to be judged?

We need hardly say that in recommending a more careful study of nature we do not advocate an indis-

criminate copying of her works. It is to the grand and beautiful alone that the attention of the artist should be directed. But we would have him select for himself, and not trust too much to the assistance of others. Nature abounds in beauties yet unappropriated, undiscovered; and art may yet reach a degree of perfection never dreamed of by the old masters. And when we imitate others ever so successfully, we are but copyists at best. While in copying and combining from nature, we create, we originate, as far as it is possible for man to originate. But even supposing that the old masters did bring their style of art to perfection, it is not one adapted to our wants. It speaks the language of another age. It will always be valued, and would be even were it less perfect than it is; for it is a portion of the history of the time to which it belongs. Perhaps one of the most important portions too. One from which we learn more of the character of the people than from their written records. But the world has gone through many revolutions since the old masters flourished. The condition of society is changed. Our opinions, religious, moral, and political, are different, and we must have a style of art adapted to our modes of thinking, in accordance with the age in which we live, or we will have no style worthy the name.

The aim of the artist, like that of the philosopher, is, or ought to be, the moral and intellectual elevation of our race. The latter would do little toward effecting his object, did he address his pupils in a language which they did not understand; nor will the former work more efficiently, unless he adopts a style which harmonizes with the thoughts, feelings, and sympathies of those for whom he labors.

But that the artists, at least of this country, are beginning to view the subject in its proper light, we think we have reason for believing; and the rapid advancement of the arts in consequence, must be evident to every one who pays attention to the subject.

Never did any country open to the artist so glorious a field as that which is presented by our own. Nature in all her majesty we have, while thought is free, and the public mind as yet untrammelled. Overawed by the opinions of no school venerated for its age, and abounding in errors sanctioned by time, he is at liberty to choose his own path; and we believe that we do not predict too much, when we say that this country is destined to establish a school of art as superior to any that has yet appeared, as our own civil and political institutions are to those of the despotisms of ancient Europe.

THE HISTORY OF A DAY.—Every day eighty-six thousand four hundred mortals die—some by violence, others of old age, some in battle or by shipwreck, some starved, and others murdered. In the course of one single day, how many brave ships go down at sea and are never heard of more! How many palaces and castles, built for a thousand years, tumble into ruins, filling the air with dust, or perish by slow decay! How many births, too—exceeding the number of deaths! and marriages! How many kings, princes, nobles, and thrones, are swept away for ever!

THE VALUE OF TIME.

THE value of time may be calculated and enforced by the mean duration of human life: in this country, at least in cities, about one half of the rational and accountable creation die under four years of age: and perhaps were the calculation to be universally extended, upon the average, thirty years existence to each would equal, if not exceed, the life of the individual; from these thirty, ten years may be deducted for childhood, during which period few rational pleasures are cultivated; this reduces the possession of time to twenty years; and, if we allow one half to sleep and sickness, we shall then have ten years left for the promotion of intellectual improvement and general happiness.

Is this the average portion of active existence allowed to man? And is this the being that is complaining of the tediousness of life, and the slow flight of time? that is continually seeking some new diversion, some fashionable amusement to consume his time? and, when his time is consumed, bitterly complaining of the brevity of life? yet very rarely reflecting on its uncertainty! Alas! for the inconsistency of my fellow-creatures! alas for my own!

The fact affords us this important lesson, which can not be expressed with more point than the Wise Man's inference from the same premises, "Whatsoever thy hand findeth to do, do it with thy might."

It suggests the necessity of using

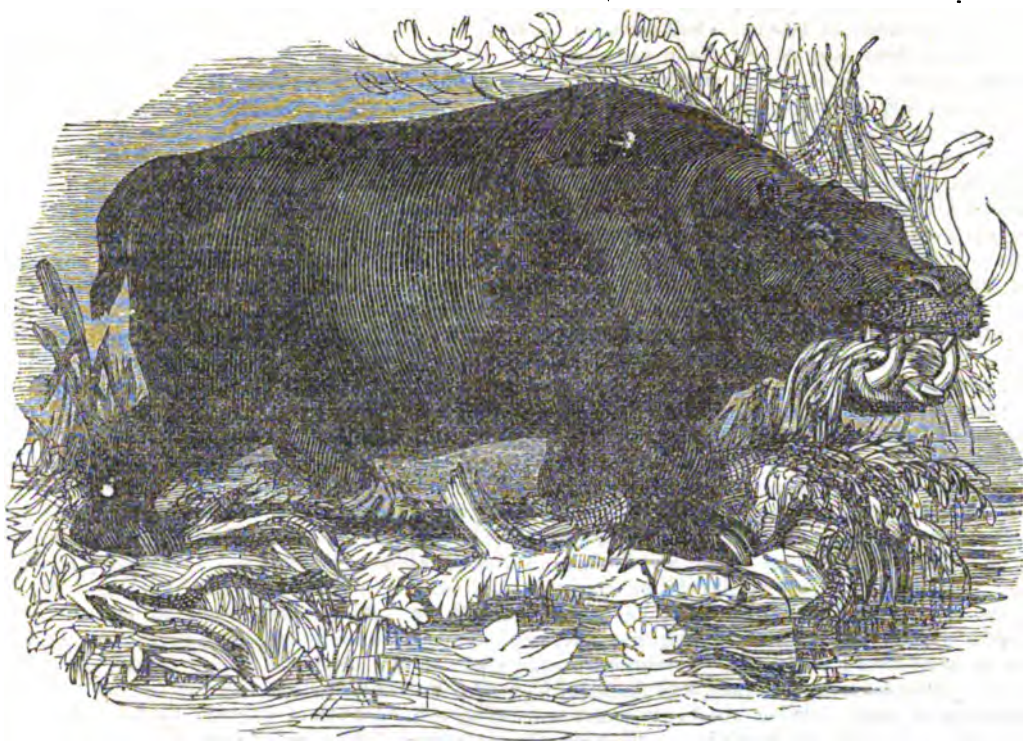
1. *Diligence in acquiring Useful Knowledge.*—Have you yet a few years before you commence the anxieties of life on your own account? How are you improving their fleeting precious moments? Are you wasting any of them?

2. *Diligence in Business.*—Are you the possessor of only ten years of life, and those perhaps half spent, and do you stand idling in the market-place, the very centre of activity? But little need be said here, an idler is universally despised.

3. *Economy of Time.*—Are you the possessor of only ten years, and those, it may be, nearly exhausted, and are you seeking expedients to kill time? Alas! go on with your reduction, and from these ten years deduct those lost by negligence, or wasted in idleness, or murdered by vice, and what is the final result?

4. This reflection suggests *Energy in benevolence.*—Look around on your fellow-men; you mean to do a great deal of good, but you are hesitating—considering—calculating, what you shall do: and while you are thus hesitating, the poor and distressed are starving—sickenings—dying—dying in ignorance, misery, and vice.

But, have you already far outlived this calculation, and do you see many probable years of existence still before you? Be it so: sit down then, with pen in hand, and calculate—how many years have you employed in your proper sphere of duty? how many years or days have you filled up in acts of beneficence to men, justice to yourself, or devotion to your Maker? Farewell, reader; pursue these inquiries alone: "take thy bill, and sit down quickly, and write"—and may conscience do its office!



THE HIPPOPOTAMUS.

THE name given to this animal is, as perhaps every reader is aware, derived from the Greek, and rendered into English, conveys the idea of a river-horse. The monstrous creature is one of the tribe styled by Baron Cuvier, pachydermater, to which belong the elephant, the rhinoceros, the wild hog, the tapir, and the common swine. It was for a long time supposed that only one species of hippopotamus existed: it is now fully believed by most naturalists that there are at least two. It is well known that considerable perplexity has been created in the minds of critical readers of the Scriptures from the description given in the book of Job of the behemoth. This animal is now generally supposed to have been the hippopotamus; others indeed suppose it to be the elephant; while not a few, among whom are Dr. J. M. Good, imagine it to be an animal of an extinct pachydermatous genus. Others have lately discovered (?) that the behemoth of Job and the iguanodon of geologists are identical. It will not particularly inform the reader's mind if we quote as we might do to an indefinite extent, from the writings of the ancients, descriptions of this certainly singular animal; they are clothed in fiction and fable. Herodotus (Clio, 71), Aristotle (Hist. Anim., book ii., chap. 7), Diodorus (book i.), and Pliny (book viii., c. 25), and various others, treat of the hippopotamus, and we mention these authorities that those who possess them may, if they please, refer to them. It is a question which is not yet decided by naturalists whether there be more than one species of this animal. M. Desmoulins is the only individual who has given us reason to

doubt it; he would make two, and perhaps the line of distinction which he draws is certainly as plainly developed as many of those which separate other species of animals. He does not rest his argument upon any (or if so, very trivial) external circumstances: the difference occurs principally in the skull; the distinction is that of the hippopotamus of the Cape and the hippopotamus of Senegal. M. Desmoulins has likewise supposed that the hippopotamus of the upper Nile may differ from the other two, and thus a third species will be discovered. The distinction between the two species already discovered, or supposed to be so, by M. Desmoulins, is as follows: In the first the "sagittal crest is at least a fifth of the distance from the occipital crest to the end of the nose; in the other, which is larger, it is scarcely the sixth. In the animal of the Cape, the lower lateral incisors are more bent; the canine teeth do not seem to be similarly used in the two animals, which would argue that there was a different mechanism employed in the movement of the jaw, and they are always larger in the Senegal animal." The bones of the hippopotamus may with propriety be termed massive; some one has poetically remarked that "the bones of this animal are like the Cyclopiæ walls of some ancient city, piled over each other, as if they were destined rather to sustain the weight than to permit motion." The digestive organs of the hippopotamus demand a notice. The teeth appear not to have been formed for the purpose of masticating, but rather for that of bruising and rudely tearing and dividing,—there is very little alteration in the food when it enters the stomach of the animal; the stomach of the full-grown hippopotamus is capable

of containing five or six bushels; and Mr. Burchell mentions an instance of one only half-grown, from whose stomach three bushels of half-chewed vegetables were taken. The food of the hippopotamus consists principally of water plants, and those which grow on the banks of the rivers on which they are found; it comes on shore at night to take its food, and, if in the neighborhood of cultivated lands, they do incalculable damage, treading beneath their ponderous feet the ripened harvest, and thus destroying what they do not seize. Hasselquist states the following curious circumstances which will doubtless be read with interest: "1. The hide of a full-grown hippopotamus is a weight for a camel. 2. It is an inveterate enemy of the crocodile, and kills him wherever he meets him. 3. It never appears below the cataracts of Egypt, wherefore the inhabitants of upper Upper Egypt alone can give any account of it. The Egyptians, very seldom bring the hide of it to Cairo, and, it is impossible to bring thither the living animal. 4. The river-horse does much damage to the Egyptians: in those places he frequents he goes on shore, and in a short space of time destroys an entire field of corn or clover, not leaving the least verdure as he passes. They have a curious manner of freeing themselves in some measure from this destructive animal: they remark the places he frequents most, and there lay a large quantity of peas. When the beast comes on shore hungry and voracious, he falls to eating what is nearest him, and, filling his belly with the peas, they occasion an insupportable thirst: he then returns immediately into the river, and drinks upon these dry peas large draughts of water, which suddenly causes his death; for the peas soon begin to swell with the water, and the Egyptians not long after find him dead on the shore, blown up as if by the strongest poison. 5. The oftener the river-horse goes on the shore the better hopes have the Egyptians of a sufficient swelling or increase of the Nile." Some parts of this relation may be considered as bordering upon the marvellous; other passages there seems no good reason to doubt. The hippopotamus is confined in its geographical distribution to the great rivers and lakes of Africa.

In concluding this brief description of the hippopotamus, we may remark that it is one of a race of animals formed to range the green forests and still lakes of our infantine world. Happily they are almost extinct: if indeed they abounded to any great extent, the human race by thousands, would be compelled to lie down and die, since these monsters would destroy vegetation, and make our lovely and beautiful vales, where the corn—tipped by the falling sunbeams—waves to and fro like flowing gold, a barren wilderness and an inhospitable desert.

THE largest cannon known was cast in 1685, at Bejapour (Hindustan) by Aulem Geer. It is of cast metal, supposed to be partly gold, and of immense value. It is 15 feet long, near 15 in circumference, and its bore being 28 inches in diameter, it will carry a ball of 2,600 pounds.

NATURAL HISTORY.

He who would mingle amusement with importance, or delight himself while at the same time he would be reaping incalculable benefits, should not neglect to attend to the study of Natural History. It is here, the mind may gather some of its sweetest pleasures, and collect information useful to an extent beyond what might at first view be considered correct. It is here we are invited as it were into a field decked with all the graces and arts of which the imagination can conceive; and it is here the mind stores up materials calculated to embellish and beautify it in a most wonderful and successful manner. It is here the mind, being directed to view objects more closely than it otherwise would, observes properties and qualities in the things of the external world which had never before met its gaze. It is here we are taught that something of an interesting and curious nature exists in that animal which stands lowest in the progressive scale of animated being, as well as in the one that stands at the head, or that is considered the chief and capital link. It is here, too, man's moral nature may be improved. By carefully investigating the objects which nature has distributed throughout her wide domain, by reflecting upon the growth of the vegetable kingdom, how the tall oak springs to giant size from a mere acorn—by reflecting upon the growth of animals, their various habits and transformations, and the great ingenuity, instinct, and reason, displayed by some classes—all these things can not help imparting an impressive idea of the goodness, power, and wisdom of Him who created them. By thus examining what is comprehended or embraced in Natural History, "*which is a description of the earth and its productions*," and by observing the order, harmony, and economy, distributed throughout all of nature's works, and the nice adaptation of means to ends manifested everywhere, they can not leave otherwise than a salutary and wholesome impression. And as these things exist in a state inferior to that occupied by man—as they are subject to and within his control, and as they add to his pleasures and luxuries of life, he in return, or in consideration of such benefits conferred upon him by his Maker, ought to be more ready to walk in the flowery paths of morality and virtue. And this is found to be true, wherever the productions of the earth are properly regarded and attentively studied. Show us an individual who is frequently in the habit of contemplating the works of nature, and we will show you an individual who excels in point of morals his more careless and unreflecting neighbor. In view then of the importance of this science, it seems somewhat astonishing, that it should be so universally neglected. There is scarcely any subject or science concerning which so much ignorance is betrayed. The learned and unlearned, "betray an ignorance on the most common subjects of natural science, which it is painful to remark." The scholar whose profound meditations dwell upon almost every topic, who, covetous after knowledge, with avidity devours the rich classes, scanning over their golden pages with the eye of an eagle, seems to forget, amid the

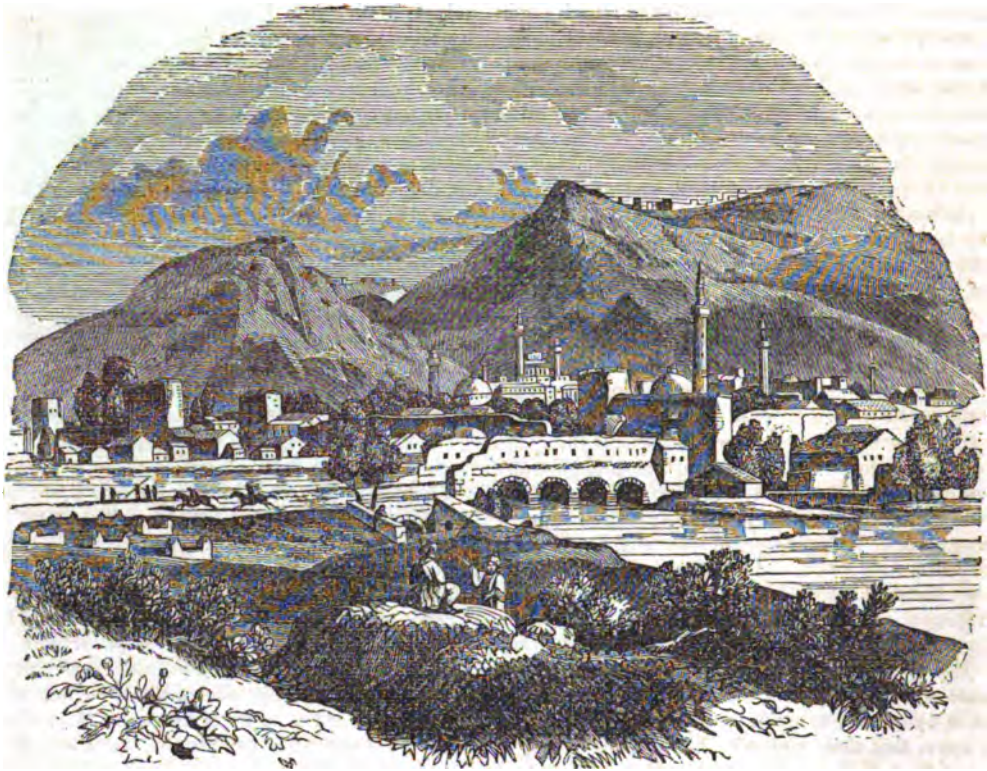
profusions of his studies, the importance which ought to be attached to this branch of knowledge. Equally true it is in regard to the metaphysician, who deals in abstract ideas, and with the energy of a Hercules assiduously applies himself, and nerves his mind again and again over the midnight lamp to find out a single trait or operation of the intellect. Equally true it is in regard to the fanciful and theoretical, who, preferring the shadow to the substance, the ideal or imaginary to the real, ride on vollied lightning, live in the crater of some fiery volcano, or people the moon and planets with beings incomparably superior in every respect to those of our own species—thus idly consuming time which could have been profitably spent, and which, had it been thus spent, would have prepared the way for enjoying the pleasures and overcoming the incidents necessarily attached to mortal life. It is only now and then one can be found, who, notwithstanding his engagements in other pursuits, gives sufficient attention to this important and interesting study. Indeed such men as Linnæus, Huber, Reaumer, and Miraldi, are rarely, if ever to be met with. The cause of this neglect must, we think, be attributed either to an ignorance of the benefits of this science, or to the fact of its treating concerning such things as are beheld every day. But methinks if every one was aware of the pleasures which arise from this source, and the influence it is calculated to exert over the moral destinies of our race, that they would be desirous of giving it the attention which its importance demands. And although it treats of such things as are beheld every day, yet it exposes to the mental vision, properties of material things which never entered the mind of the superficial observer—properties which, though discovered in the most common things of nature, are not less striking and imposing than those discovered in the more wonderful works of the Creator. A contrast in things is pleasing and interesting, “and a true philosopher, after he has marked the manners of a civilized kingdom, always finds his knowledge enlarged by the observations of the simpler habits of the rustic, or even the ruder customs of the savage.”

Natural history then ought to be studied, because it is a source of pleasure and amusement, and because the influence it is calculated to exert over our moral destinies, is by no means inconsiderable. To observe the habits of animals, to watch their various habits, and to mark the instinct and reason they display on all necessary occasions, must be pleasing to all, and particularly so to him who possesses curiosity together with a reflecting mind. To observe the economy in the division of their labor, their means of resort to lessen the weariness of toil, the love, courage, patience, and indomitable perseverance and foresight manifested by many classes, can not fail to interest the most incurious observer, while it fills with astonishment the mind of the profound and enlightened philosopher. And indeed there is not a single class, but in which exist striking and pleasing habits. The monas, the simplest animal of which we have any acquaintance, which is of microscopic minuteness, without any organ whatever, and the

polypi, one degree higher in the scale of existence, are objects not unworthy the attention. Indeed the meanest insect that crawls the earth, scarcely affording evidence of animated being, or that wings its way at pleasure through the air, presents, upon strict examination, a pleasing and different aspect from what it did on a merely superficial inspection. And it is not only the animal kingdom that affords fit subjects for observation, reflection, and pleasure, but the same is presented in the mineral and vegetable kingdoms. And to the true votary of science everything in nature presents a lovely aspect. To him there are “books in the running brooks, sermons in stones, good in everything.” To him—

“There is a pleasure in the pathless woods,
There is a rapture on the lonely shore;
There is society where none intrudes,
By the deep sea, and music in its roar.”

Such has been the pleasure which some have experienced from studying natural objects, that they retired from society in order to enlarge the sphere of their amusement by contemplation, amid the silent retreats of the forest. Thus, we are informed by Cicero and Pliny, that the philosopher Hyliscus withdrew from the society of his fellow-man, and retired into the desert to reflect upon the more peaceful industry of the bee—to observe its habits, and to ascertain the traits of its character. And in our own times we have an example in Audubon, the great American ornithologist, not less striking than the one just mentioned. Early smitten with the golden plumage and melody of the feathered songsters, he has devoted his life to the contemplation of their various habits. He has preferred to roam, solitary and alone, accompanied only by his faithful dog, and to listen to the rapturous harmony and sweet carols sent forth by choristers inhabiting groves more delightful than Arcadia, to all the pleasures of human society, or even the family circle. These two instances of themselves afford ample proof of the pleasures that can be derived from the study of nature. The study of natural history, or either of the natural sciences, improves and elevates the morals. Whatever tends to refine and ennoble the mind—whatever tends to produce humility—tends in an equal degree to polish and elevate our moral nature. If, then, the complexion given to the mind, or that which it receives, depends chiefly upon the character of the subjects, upon which it is principally engaged, it is quite evident that our moral, intellectual, and even physical condition becomes profited by the study of nature. For where is the sphere of action in which more valuable lessons can be obtained? From what source can we derive higher, nobler, and loftier feelings and conceptions? What is more calculated to add lustre to man's moral and mental character, than strict habits of observation? “A habit of observation refines our feelings. It is a source of interesting amusement, prevents idle or vicious propensities, and exalts the mind to a love of virtue and rational entertainment.” Every object in nature that solicits our attention, if properly viewed, will produce just such an effect upon the moral character.



ANTIOCH.

THE ancient city of Antioch, the capital of Syria, should be carefully distinguished from the Antioch in Pisidia. It was situated upon the left bank of the Orontes; the valley of which forms at this place a fertile plain, about ten miles long and five or six broad. It stood about three hundred miles to the north of Jerusalem, and twenty-three miles from the place where the Orontes discharges itself into the Mediterranean. The town was built by Seleucus Nicator, who erected into an independent monarchy the dominions conquered by Alexander in Western Asia, and who named it after his father Antiochus. It then became the seat of this new empire, and as such, as well as from its commodious and central situation, it grew to be one of the largest and most important cities in the world; nor does it appear that it declined, but rather that it increased, when it became the capital of the Roman provinces in Asia. It ranked third, after Rome and Alexandria, among the cities of the empire. The early Jewish writers, when they wanted to express the idea of a great city, often did so by a reference to Antioch, in the terms, "as great as Antioch." Great numbers of Jews were settled there; for at this time the Jews were widely dispersed in and beyond the Roman empire, large bodies of them being found in most of the great cities; and to Antioch they had been in an especial manner allured, not only by the greatness of the city, its being the seat of an extensive commerce, and its proximity to their own country—but by the civil privileges which had been granted by the Greek

kings of Syria, and confirmed by the Romans, to such of the Jews as chose to settle there.

Strabo's account of the city may be taken to represent it as it appeared at the time when the believers in Christ received the name of Christians first at Antioch, and when it received repeated visits from the ardent apostle of the Gentiles. It then consisted of four distinct quarters, each having a wall of its own, and the whole enclosed by a common wall. These quarters marked the successive additions which the city received from the time of Seleucia, the founder, to that of Antiochus Epiphanes. He adds, that the town was little inferior in extent to Seleucia on the Tigris, and Alexandria in Egypt. Several of the Roman emperors were fond of spending their time at Antioch, as, beside the recommendations of its genial and salubrious climate, it abounded in all the conveniences, luxuries, and pleasures of life; the city being also renowned for its frequent festivals, and for the passion of its inhabitants for the games of the circus and the amusements of the theatre.

Antioch continued to be a city of great importance, notwithstanding the frequent and terrible visitations of earthquakes, till Chosroes the Persian took it, and nearly levelled it with the ground. It was rebuilt by Justinian, and again became a considerable place, and continued so till the time of the Crusades; to which epoch some assign the remains of a wall, or fort, on the hill to the south of the city. Antioch, after it was taken by the Crusaders under Godfrey and Boemond (A. D. 1098), became a Christian principality, under the European conquerors of Syria. The Sultan Bibars, in 1269, took it from the Chris

tians, and destroyed its churches. It afterward passed under Turkish dominion; but has never recovered its commerce and importance, which were transferred to Aleppo. Mr. Buckingham says, that the Christians of Antioch have not at present a single church; and that they assemble for prayer in a cavern, dedicated to St. John. Antioch was taken possession of by Ibrahim Pacha, August 1, 1832, but was subsequently restored to the sultan.

From the last sentences it will be seen that Antioch still exists as a town of some note, although grievously declined from its ancient importance. It now bears the modified name of Antaki, and the language of the people is Turkish. The town is seated at the foot of a steep and bare hill, which terminates the range of Jabel Okrah, the Mount Casius of the ancients; having before it the wide wady beforementioned, which is thickly wooded and highly cultivated. The river which flows through it is about one hundred and fifty feet wide. It was formerly navigated up to the city, and might again be made navigable for sailing-boats, if cleared out below. It is now crossed by a substantial stone bridge. The town itself, although inferior only to Aleppo, Damascus, and Hamah, in size, and consequently larger than any of those on the coast, is not so well built as these generally are, and has no large public buildings of any beauty. The houses are mostly of stone, and are all pent-roofed, and covered with red tiles; many of them are three stories high, but more generally two, and the upper part is then constructed of wood. The streets are narrow, and have a high raised causeway of flat pavement on each side for foot-passengers, and a very narrow and deep path between for horses, seldom wide enough to admit of two passing each other. The bazars are mostly open; and are unusually numerous in proportion to the size of the town, as this is a mart of supply for an extensive tract of country around it. All the articles in demand are found here in abundance, and the manufactures of the town itself consist in coarse pottery, cotton, cloth, some silk twist, several tanneries, and saddlery.

The Mahometans have fourteen mosques; the Jews assemble for worship in a room in the house of their chief; and the Christians offer their prayers in a cave. There are two khans, and several fountains, all of them of a very ordinary kind. Much of the above, however, applies to the city as it stood before the terrible earthquake which devastated this part of Syria in 1822. Pliny Fisk, the American missionary, who visited it two years after, says that walls, mosques, and houses, were seen lying prostrate in every direction, filling the streets with ruins. He did not estimate the population at more than four or five thousand: about an equal number having perished by the earthquake. The inhabitants were then living in huts outside the town. Since that time, the town seems to have been restored to nearly its former condition and population. The existing town, however, though loosely built, scarcely covers one third of the space enclosed by the ancient walls, of which so much is preserved entire, that their line may easily be traced. Authorities differ as to the circuit enclosed by these walls: Mr. Buckingham says four

miles, which is however much less than the amount assigned by ancient authorities: but these walls appear to have been for the most part of Roman work: and, very probably, were built by Justinian after the town had been ruined by the Persians; and which we may imagine to have been of much inferior extent to that of the original city. The northwest wall runs along by the river, the southwest one ascends the steep side of the hill that overlooks the city, that on the southeast runs along its summit, and the northeast one descends again over the side of the hill at the opposite extreme of the city, to meet that which ran along the river's bank. These walls are from thirty to fifty feet high, fifteen feet thick, and flanked with four hundred square towers. The northern portion within the ancient walls is now filled with one extensive wood of gardens, chiefly olive, mulberry, and fig-trees; and along the winding banks of the river tall and slender poplars were seen. The inhabitants still cherish the remembrance of St. Paul's visit to their city: and it is remarkable that one of the gates—that leading to Aleppo—is still called, by all classes, Bab Bablous, or the gate of St. Paul. There are some remains of ancient aqueducts and bridges; and, after heavy rains, antique marble pavements are visible in many parts of the towns; and gems, coins, cornelians, and rings, are very frequently found.

The Christian interest connected with this proud city—once "the Queen of the East," and then "the eye of the Eastern Church," and "Theopolis"—the city of God—may, in connexion with the engraved illustration, probably render these details interesting to our readers.

DRAGONS.

ALL the old books on natural history contain marvellous accounts of what they call "dragons;" and which they represent as abounding in all waste and outlandish places. They have never been seen, however, by any modern traveller! The following description from Aristotle will introduce them to the acquaintance of our readers:—

"Ctesias says, there is a certain savage animal in India, the name of which is Martichora, that has a triple row of teeth in each jaw. He adds, that this animal is equal in magnitude to a lion; that it is similarly hairy with, and has feet resembling those of a lion, but that its face and ears are like those of a man, and that its eyes are azure, and its color resembling that of cinnabar. It has also a tail armed with a sting, and resembling the tail of the land scorpion. It is likewise furnished with certain native darts, which it hurls forth, and it utters a sound resembling that of a pipe and a trumpet. But it runs with no less swiftness than the stag; and is savage, and feeds on human flesh."

Notwithstanding the authority of the great master of Alexander, we venture to affirm, that this description is as purely imaginary as the fact which he also states, that if a serpent's eyes be dug out they will shortly be reproduced; and, that the amputated tails

of lizards are also similarly obliging. Succeeding writers followed *worthily* in this train of wonders, and beasts of all shapes and dispositions speedily decorated their pages.

The imaginative faculty, thus set at liberty, having exhausted itself in devising odd shapes for its grotesque family, proceeded to invest them with human feelings; and hence have originated a great number of love stories, in which the dragons are represented carrying off high-born dames, building sylvan palaces for their abode, and performing deeds of chivalric daring for their defence or amusement. It is honorable, however, to the present intelligence of the times, to say, that every school-boy knows these dragon histories to be "cunningly-devised fables;" which will, therefore, save the trouble of confutation, and leave us only the task of developing the cause which brought them into existence.

We consider that dragons are more chimeras of the brain, thrown off from a heated fancy when under the influence of fear. To make this evident, it will be necessary to define, in what fear consists, and then briefly to review its effects. Locke says, "Fear is an uneasiness of the mind, upon the thought of future evil likely to befall us;" and "Cogan on the Passions," states fear to be "a painful sensation, produced by the immediate apprehension of some impending evil;" and Search, in his "Light of Nature," adds, that "when the nerves are weak, and extremely sensible, they fall presently into tremors, that throw the mind off the hinges, and cast a confusion over her." From these definitions we learn, therefore, that fear predisposes the mind to false impressions; and hence we find Shakspeare's Richard the Third, in the agonies of remorse, exclaiming,

"O coward conscience! how dost thou afflict me!
The lights burn *blue*. Is it not dead midnight?
Cold, *fearful* drops, stand on my trembling flesh.
What? do I fear myself? There's none else by."

In Richard's case, fear over-mastering the truth of his perceptions, caused the light apparently to "*burn blue*." Again, in "Smart's Odes," we find the same principle recognised:

"And thrice he [Chanticleer] call'd aloud the tardy sun,
And thrice he hailed the dawn's ambiguous light;
Back to their graves the *fear-begotten phantoms* run."

Now, it is our notion, that a dragon is nothing more than one of these fear-begotten phantoms; and we conceive that they might have originated thus: Suppose a man in those remote ages, when ignorance was the commonest misfortune, to be passing through the "ambiguous light" of a tropical forest; the dreariness of the place would excite his fears, and give a preternatural acuteness to his senses: suddenly an immense serpent rises, in horrid abruptness, hissing from the bushes; the man starts—fear overcomes him—he is paralyzed for a moment, and his fascinated eyes, brimful of death, fix themselves immovably upon the slimy reptile, as he writhes in tortuous horror, previous to a fatal spring. Thus entranced, he stands for a moment, till, summoning his fleeting energies, he dashes with spasmodic violence from the scene—

"Full fast he flies, and dares not look behind him,
Till, out of breath, he overtakes his fellows,

Who gather round, and wonder at the tale
Of horrid apparition, tall and ghastly."

The swift motions of the serpent half seen in the darkness, could not, surely, be accomplished without wings and feet, and wings and feet he accordingly gives him; saucer eyes, smoking jaws, roaring voice, and stinging tail, are finishing touches, which he adds in after narratives: for he continues, through life, to tell the tale to every new acquaintance, with the small addition, perhaps, of a desperate combat, fought by himself with the great, roaring, smoking, stinging, winged dragon. That this is not an exaggerated picture, we refer the reader to our extract from Aristotle, in which the "triple rows of teeth," "lion's feet," "blue eyes," "red skin," "stinging tail," "native darts," "swiftness," "savageness," and appetite for "human flesh," are all the lurid flashes of a mind insane through fear. It was, without doubt, as we have already intimated, that from some such turbid sources, the ancient naturalists derived their descriptions; for we find that they always begin with, "It is said," "Ctesias says," "We have heard," &c.; but never *we have seen*. These hearsay narratives have descended to our own times through a vast number of writers who never thought for themselves, and who, usually of a superstitious cast, took care in their serpentine embellishments, that the world should not forget the philosophic fact, that a snowball rolling upon snow enlarges as it descends.

We trust that we have thus clearly developed the ultimate cause to which the generation of "gorgons and hydras dire" may be traced; but the subject will not be complete without the useful demonstration, that error always increases our liability to imposition: frauds are seldom committed on the intelligent. This axiom admits of an illustration very much to our present purpose. Many years since, an impostor in Germany manufactured a seven-headed dragon, and exhibited it to the *learned*, as a real stuffed specimen. The existence of dragons being an article in the popular creed, it did not require a very great exertion of credulity to add "seven heads" to the specific description; and, thus the monster shortly became an object of "undoubted" wonder; and after passing through many hands, it was at length deposited in the museum at Hamburg, where it was valued at *seven thousand pounds*! Here it continued the "lion" of the place, attracting multitudes of visitors, and greatly enriching the tradesmen in its vicinity. At length however, the illustrious Linnæus, who was then a young man, and on his first tour, arrived at the city; a sight of this strange beast at once convinced him that it was a vile manufacture of fish skins, birds' talons, canine teeth, straw, &c. The truth of this opinion he publicly demonstrated: but, instead of getting honor for his disabuse of the public mind, a riot was made by the tradespeople, who declared their bread in danger by his cursed doctrines, and accordingly he was shamefully driven from the city.

In the Arctic regions persons can converse a mile distant, when the thermometer is below zero.



View of Patmos.

PATMOS.

We were close in with "the isle that is called Patmos" several hours, and had a good opportunity of examining its appearance, so far as is possible, from the sea. It is about twenty miles in circumference, and its aspect is forbidding and cheerless. The shores are in most places steep and precipitate, and from our vessel it appeared as if the inhabitants would be in constant danger of rolling down into the sea. The highest part of the island is surmounted by a monastery, dedicated to St. John, round which are built the houses of a respectable town. We could discover very few trees. The sailors were lavish in their praises of the inhabitants.

It was with unutterable feelings I gazed upon the dreary rock. The situation of the weeping exiles was before me, who were banished from the pleasures and applauses of imperial Rome, and were sent to inhabit this dull and distant region, with none to converse with but sufferers in the same calamities, whose very attempts at consolation would only add still deeper sorrow. What must they have felt, and how must they have wept, when they beheld from the horizon the little speck that was to constitute their world? There was one among these exiles whose brow was calm, whose eye was bedimmed by no tear, and from whose countenance seemed to beam the serenity of a spirit in bliss. It was the beloved disciple of the Lord. The banishment of the venerable apostle was from a cause perhaps different from that of any of the exiles who had preceded him, as it was "for the word of God, and for the testimony of Jesus Christ," Rev. i. 9.

Standing upon one of the eminences of the island and turning toward the continent, St. John would be able to distinguish the mountains that might also be seen from the whole of the seven churches of Asia; and as he had planted some of them with his own hand, and probably visited all of them, can we doubt he would often stand thus, and looking toward these interesting spots, lift up his hands to heaven, and pour out his soul in prayer, that He who walked among the golden candlesticks would continue to visit them in mercy, and save them from the power of the Antichrist that was to come. It is one of those thoughts upon which the mind so much delights to dwell, that from this rock, surrounded only by other similar rocks, and looking out upon distant mountains, there should have been an insight given into futurity farther and clearer than in any other place was ever afforded unto mere man.—*Hardy's Notices of the Holy Land.*

ENDEMIC AND EPIDEMIC DISEASES.

CERTAIN of the diseases which afflict the human body are found to be confined to particular localities, and are thence termed *endemic*, from two Greek words signifying that which is in or among a people. Others again, which, prevailing only for a certain time over a greater or less tract of country, afterward disappear, again to return at uncertain periods, are termed *epidemic*, from Greek words signifying upon or over a people. A few general particulars concerning each of these, separated from medical detail, will prove perhaps interesting to the reader.

Endemic diseases are for the most part attributable to some peculiarities of the soil, air, food, or habits of the localities in which they appear. Abject poverty, and its necessary consequences, want of cleanliness, bad or deficient diet, and moral degradation, is the fertile source of these maladies; while the removal of many of these evils is often attended with the disappearance of the endemics. We may lay it down as a law, says M. Andral, that the number and gravity of many of these complaints are found in an inverse proportion to the degree of civilization and comfort diffused in a country. Countries formerly healthy have become the sources of the most pestilential diseases, not from any change of climate they have undergone, but from the existence of bad institutions, which have neglected the cultivation of the arts of industry. Thus Egypt, formerly so healthy, is now never free from the plague. A great part of the coast of Italy, formerly rendered inhabitable by the Romans, is now the seat of malignant fever, while in Ireland the typhus fever annually sweeps off thousands of the inhabitants of its cities. On the other hand, he adds, in any country in which human intelligence is permitted to increase and develop itself in every point of view, so does the sanatory state of its population augment. Thus it is well known to what an extent various diseases (we may mention plague, cutaneous affections, scurvy, &c.) have disappeared of late years in European cities. All experience tends to prove that the health of a country will be proportionally good to the degree of comfort enjoyed by its inhabitants. M. Villermé states that the number of deaths in the different parts of Paris is not so much proportionate to the crowded state of the houses as it is to the number of houses which are untaxed in the different localities. So too the improvement in the state of prisons affords a pleasing proof of how much the amelioration of man's condition rests with man himself. Thus the mortality in the prisons of Lyon, from 1800 to 1806, averaged one in nineteen; from 1820 to 1826, one in forty-three; at Rouen, from 1812 to 1814, one in four; from 1815 to 1826, one in fifty-one. Although we may do much yet there are external influences in operation less under the control of man, the chief of which have reference to the state of the atmosphere, or of the aliments employed. Many of these are, however, susceptible of amelioration by improving the physical condition of the localities, or, where this is impracticable, removing from them. A small class of these maladies are not explicable upon any known grounds. Medical observers are by degrees becoming convinced that for the due comprehending the nature and relief of endemic diseases a more accurate study of topography than has yet been undertaken is essential.

It has been remarked that the inhabitants of countries or places in which diseases prevail endemically are very often exempt from other serious forms of disease. The natives of a country often become inured by habit to circumstances which at once manifest their evil influence upon the newly arrived stranger. This is especially seen in tropical regions. In countries, too, inhabited by different races of men,

as the Negroes and Malays, the Negroes and Americans, the same circumstances do not produce the same effect upon these different varieties. The water of the Seine produces disorder in all but the Parisian who is accustomed to its use. So too the treatment of the self-same disease is often found to be required to be different, according to the locality in which the person affected resides, and even to the rank of society to which he belongs.

We will now enumerate some of the principal endemical diseases.

A more perfect example of an endemic could scarcely be found than the *Pellagra*, which attacks so large a proportion (a sixth or seventh part) of the inhabitants of the alluvial plains of Lombardy, stretching out between the Alps and the Po. The public hospitals, large as they are, are insufficient to accommodate all the subjects of this disease, many of whom perish in their own habitations, or drag on a lingering and miserable existence. The disease, on its first appearance, much resembles erysipelas, leaving the skin, however very rough; attacks are renewed from time to time for the space of three or more years during which the skin becomes entirely altered from its natural structure, and takes on the appearance "of the dry black skin of a fish;" and this roughened appearance of the skin has obtained the disease its name. The patient loses the use of his limbs, and becomes the victim of severe pains in different parts of the body, and of a most tormenting sensation of heat down the spine, depriving him of rest by day and sleep by night. The mind is also frequently disordered from the intensity of the suffering, and Dr. Holland found one third of the patients of the lunatic hospital at Milan to be sufferers from this disease. A propensity to suicide frequently exists, and the mode of committing this has so frequently been by drowning, that Strambi calls the disease *hydromania*. The cause of the disease is involved in obscurity. The Milanese physicians attribute it to the poverty and bad diet of the peasantry (it is rarely found in towns), and Vaccari calls it emphatically the "mal de misère." The diet is almost exclusively vegetable, consisting of bad, sour rye-bread, maize, rice, &c.; for rarely, if ever, does the poor peasant, in that prolific soil, partake of the herd he tends, or the juice of the vine he cultivates. "Had Rogers and Wordsworth," says Dr. James Johnson, "while celebrating the borders of Como and Lago Maggiore, representing them as terrestrial paradises, been acquainted with the pestilence that afflicts one seventh of the inhabitants, they would have curbed a little their poetic fancies, or added a background to the picture."

The *Plica Polonica*, or plaited hair, is a curious disease prevalent in Poland especially, although it is sometimes also seen in Russia, Prussia, Belgium, and Hungary. The popular opinion is that it was introduced into Poland by the Tartars in the twelfth or thirteenth century, but some authors assign as late a period as the sixteenth for its first appearance. The disease consists in an exuberant growth of the hair, which becomes matted and interlaced in the most inextricable confusion. So far from desiring to prevent this however, the Pole is proud of it, and

endeavors, by the addition of grease and hot woollen bonnets, to increase it; while the women for the same purpose knot instead of curling the hair, and apply to it glue or resin. When we add that a fetid odor attends the complaint, it will readily be imagined that the subjects of it present a disgusting exhibition of filth and disease. It is looked upon by many as a special gift of Providence, as preventive of other sickness and calamities, while a beggar possessing a plica finds in it a certain resource for procuring alms. The hair thus sometimes increases prodigiously, and while a length of two or three feet is often met with, in other cases it has trailed along the ground as the individual walked. The nails frequently partake of the disease, becoming yellow, long, and crooked, like the talons of a bird. The chief inconvenience attending the affection is the great weight of the hair, which sometimes amounts to several pounds, while any dragging motion applied to it, by irritating the bulbs, is productive of great suffering. The beard often becomes plicated in the same manner. Bachstrom mentions that of a Jew which touched the ground; and Corona saw at Rome a Polish hermit whose beard fell from his bed on to the floor. Various animals are subject to this disease, but it is especially among horses that it is found both in Poland and Russia; the Pole leaves no means untried to produce the plicated state of the mane of his horse, which sometimes acquires a great length.

Although this disgusting disease has been attributed to various causes, filth is now pretty generally believed to be the most predominant: it is seldom seen among the better classes, but is especially found among the Polish Jews, a large proportion of the community, and perhaps the filthiest inhabitants of Europe. The French surgeons soon cured the Polish recruits by cutting off the hair, and paying great attention to cleanliness, while the disease has diminished in proportion as the condition of the population has improved.

The emanations from the surface of the earth, known by the appellation of *miasmata* or *malaria*, although we are ignorant of their nature, produce very marked effects upon the human economy in the localities where they exist. In England these miasms chiefly proceed from marshy districts, producing the well-known disease called *ague* or *intermitting fever*, and which prevails endemically in the fenny and swampy districts of Lincolnshire, Cambridgeshire, Essex, &c. In warmer climates, and especially when aided by deficient or bad food, and the accumulation of animal filth acting upon a dense population, the several descriptions of pestilential fevers are produced, as, for example, those which ravage the south of Europe, the coasts of Africa, and the West Indies. The extent to which the malaria prevails in the Campagna di Roma is well known, causing all who can do so to quit Rome from the month of July to that of October. Although marshy districts are well known as being pre-eminently capable of producing the malaria, yet are they not exclusively so; the result of numerous observations proves that the only circumstances essential to its production are the recent presence of water or mere moisture, and

the influence of solar heat. When the quantity of water present is very great, the effects of the malaria frequently do not manifest themselves until this subsides. Thus travellers in Africa have found the danger greatest at the commencement of the rains; when these have continued some time, the sickness has abated, again to be renewed upon their cessation, when the soil has become somewhat dried by the evaporation from its surface. So in the Burmese war it was found that at the subsidence of the inundations the English troops chiefly suffered. Dr. Ferguson relates that a most destructive form of fever showed itself in the army which pursued the course of the Guadiana after the battle of Talavera, that river being dried up into little pools. At other times, during the Peninsular war, the worst fevers were found to occur when the great heat which prevailed had dried up the surface of the earth, the emanations escaping from the cracks and fissures which resulted. The collections of low brush-wood, or of reeds and grass, termed *jungles*, generate a malaria, producing what has been called the *jungle fever*. The inundation and draining of rice-grounds have proved a most fertile source of disease both in India and Europe. Napoleon intended to have prohibited its cultivation in Italy and France, as the emperor of Russia had already done in part of his dominions.

Other sources of malaria are found in the cultivation of indigo, the steeping of flax, the mud left after the drying up of ponds and marshes in summer, the turning up of land which has long laid as pasture, neglected drains and sewers in warm weather, &c., &c. Dr. McCulloch observes that alluvial ground, even when not marshy or intersected by ditches, is yet often very productive of malaria, as is seen in the vicinity of the Swiss lakes and along the borders of the principal rivers of France. The peat-bogs in Scotland and Ireland do not produce malaria.

Many circumstances influence the development of the effects of malaria; thus it has sometimes been carried to great distances, and to situations topographically healthy, by winds and currents of air; while also the felling of woods and forests has often, by exposing a quantity of damp soil to the action of the sun's rays, generated miasmata (or by the removal of a natural screen which had heretofore resisted their progress from surrounding parts), in a site hitherto uncontaminated by their influence. It is sometimes very local in its influence; thus, the inhabitants of one side of the Kent road, near Rochester, England, suffered severely from *ague*, while those on the opposite were quite free from it. Strangers are sometimes less liable to be attacked in malarious districts than the inhabitants. Sir James Clark found this to be the case with the French, German, and English artists residing at Rome, who seldom were seized with the fever until the second or third year of their residence; and he considers the fears of suddenly acquiring the malaria by merely passing through its districts as quite groundless. The residence in a malarious region not only disposes to the production of attacks of fever, but to a general disorder and decay of the vital powers; and the change which thus takes place is forcibly depict-

ed in the countenance. Dr. James Johnson, an experienced traveller, describing it in the Lombardo-Venetian plains, thus expresses himself: "The alluvial debouches of the Scheldt, the Nile, the Oronoko, Euphrates, Ganges, Danube, and Po, have so deteriorated the health of man, and stamped on his visage such indelible marks of disease, that the most superficial observer can never forget the humiliating portrait." Dr. McCulloch remarks that the inhabitants of France and Holland are very averse to allowing that any of the maladies result from the influence of malaria, and endeavors to explain their origin in a variety of ingenious modes. He says that "it may excite a smile in our country to know that the people of Walcheren repelled with no small indignation, at the time of the celebrated visit of the English troops, the charge of unhealthiness which was brought against their beloved birth-place."

If the inhabitants of alluvial plains and marshy regions have their endemic diseases, so too have the dwellers in hilly and mountainous districts theirs. One of these is the *goitre* or swelled neck. It is met with principally in Switzerland, Savoy, the Tyrol, and in Derbyshire in Britain (whence called familiarly the Derbyshire neck). Its locality is often very confined; thus the inhabitants of the valley of the Rhone are frequently afflicted by it; while in the valley of Chamouny, separated only by the Col de Balme, it is seldom seen. It affects females almost exclusively. The cause of this disease is involved in much obscurity. It has been usually attributed to bad diet and the use of impure water. Dr. Bally, a resident in a goitrous district, informed Dr. J. Johnson that the waters which trickled down from the mountains would produce or augment the disease in eight or ten days, while those who abstained from these remained free from the disease. Dr. Mason Good found that at Matlock it was chiefly the children of the poor who suffered.

A much more terrible disease, *Cretinism*, is found in the Alps and Pyrenees, and is indeed sometimes combined with goitre. The Cretin, stunted in growth, and having a huge malformed head, presents a hideous object to the traveller. The intellect participates in the physical debility, and the individuals drag on their days in a state of imbecility, quite contented if they can pass their lives in eating and sleeping. This disease, like goitre, has been attributed to the bad diet and impure water of these regions, and like it, is very confined in its localities, a valley frequently containing numbers of cretins, while the surrounding hills are quite free from them. The dirty and degraded state of many of the villages will contribute to the production of the disease; and it is said that since these have been somewhat improved, the numbers have diminished. Dr. James Johnson doubts this, and thinks rather that since the belief which once so generally prevailed (as in Turkey, regarding idiots) that a cretin was a special gift of Providence to the family in which he was found has declined, they are kept more out of sight than formerly; and indeed he saw them driven to the back parts of the villages as he approached. He says, concerning the places in which they are found, "The Vallois, situ-

ated in a damp soil, and sheltered by stupendous mountains, is the land of cretinism, and Sion is its capital. I explored this town, and I can safely aver that in no part of the world, not even excepting the Jews' quarter at Rome, or the lanes of Itri and Fondi, in the kingdom of Naples, have I seen such intense filth. With the exception of two or three streets, the others present nothing on their surface but a nameless mass of animal and vegetable corruption; the alleys are narrow, and the houses constructed as if they were designed for malefactors' dungeons rather than for the abodes of men at liberty."

Warm climates are liable to several endemical diseases; we can only briefly allude to two or three of these. *Elephantiasis*, or the Barbadoes leg, is so termed from the huge misshapen limb, resembling in some degree that of an elephant. It is especially endemic in Barbadoes, in Cochin, the coast of Ceylon, and Egypt. Until a century ago it was confined in Barbadoes exclusively to the black population; since then the whites have also suffered, but neither there nor at Ceylon do the imported whites suffer. It excepts neither rank nor sex, and often comes on in very early life. The disease commences with fever and inflammation of the limb, both of which afterward subside; repeated recurrences, however, at length produce the tumefied and shapeless form which gives the name to the disease.

The *Frambesia* or *Yaws*, an eruptive disease, so called from its resemblance to raspberries, and consisting of the production of numerous excrescences on different parts of the surface of the body, is endemical in Guinea, and has been thence transported with the slaves to America and the West Indies. It has been supposed by several authors to be identical with the leprosy with which the Jews were affected during their passage through the wilderness. As one attack prevents future ones, the Africans expose their children to it, it being readily communicable by contact.

The *Dracunculus*, or *Guinea-worm*, is a very singular disease, which affects chiefly the negro tribe. It consists of a long, thin worm, which lies imbedded in the interstices of various muscles of the body, but especially those of the legs. It creates immense irritation, and incapacitates the person suffering from following his employment. The worm is frequently extracted by an inch or two at a time, a piece of thread being fastened around the remainder to prevent its retraction. The entire length has sometimes reached two or three feet. The Africans carry this disease with them into the countries into which they are imported as slaves; and as it sometimes reigns epidemically, nearly half the negroes on an estate have sometimes been at once disabled working. Dr. Chisholm met with three thousand cases in three years in the island of Granada. The disease is not exclusively confined to persons of African origin, and prevails very extensively in different parts of India, especially the presidency of Bombay. The mode in which this animal becomes introduced into the human system has excited much discussion, but the opinion held by various travellers, as Park, Bruce, &c., and by persons who have carefully investigated all the circumstances and localities of the disease, corre-

sponds with the popular one, namely, that the ova of this worm obtain admission by reason of the persons affected having drunk of the waters of certain wells containing them. This would indeed seem almost to be proved to be the case by the fact that only those of the inhabitants of a certain district who partook of the waters in question have become affected, while those who had not done so remained quite healthy; while again the providing improved cisterns and wells has frequently been found to banish the disease from a locality in which heretofore it committed great ravages.

Several hot climates produce endemical diseases of the eyes, and this is especially the case with Egypt, in which country a most destructive form of *ophthalmia* prevails; this, it would seem, from the accounts of historians, has existed there from remote ages; and in our own day its virulence was manifested in its attacks upon both the French and British armies while employed in that country. That this should be the case can excite no surprise when it is recollected that persons passing through this land are exposed to intense heat by day and a chilling dew by night, to the emanations from the banks of the Nile, and to the irritation of the sandy soil, which also adds, by the reflection it produces, to the already dazzling and fatiguing brilliancy of the solar rays.

Epidemics do not usually, like endemics, exist for an indefinite period in the places wherein they appear. Their origin, progress, and termination, are frequently matters of historical record. Many of those which formerly afflicted our ancestors have disappeared, to be replaced by others unknown to them. Their importance, measured by the devastation they produce, is infinitely greater than that of endemics; and indeed they constitute the greatest calamity to which the human race can be subjected. "What," says M. Littré, "are twenty battles, or even twenty years of the severest warfare, compared to the ravages caused by these dreadful scourges? The cholera has killed in a few years as many persons as fell during all the wars of the French Revolution. It is calculated that the Black Pestilence of the fourteenth century carried off in Europe alone above twenty-five million souls; while that which devastated the world during the reign of Justinian did still more execution. What war again has the universality of an epidemic? The cholera, generated in India, spread thence over entire Europe, and penetrated even to America."

Before enumerating a few examples of the principal epidemics, we may make one or two remarks upon some of the circumstances favoring their production. In this respect epidemical diseases vary much. Some, such as the cholera and the influenza, seem to be very independent of local circumstances; while others, as the plague, yellow fever, &c., seem to be very much influenced by these. A change in the constitution of the air has been very generally supposed to occur during the epidemic visitation; no positive proof of this can be furnished, but it is well known that at least its temperature exerts great influence, for the disease is always most severe when this is elevated. The history of various plagues and pestilences shows us that coincident with them violent convulsions of nature, as earthquakes, tempests, and

volcanic eruptions, frequently occur. Noah Webster collected fifty well-marked instances, wherein one or other of these prevailed. It is not a little curious that at these times vast numbers of insects are frequently produced, and this sometimes only in certain localities, or of some particular species; thus, at the plague of Lausanne (1613), and in Holland (1635), an incredible number of flies were produced; and at the plague of Lantzic (1709) spiders abounded. On the contrary, the number of the feathered creation have often been found to become much diminished, while a great mortality of several of the domesticated animals frequently occurs; this was the case with regard to the cattle prior to the Great Plague of London. To some other circumstances tending to favor the production of epidemic diseases, we can refer with great satisfaction, since modern improvements in these respects have caused a marked diminution in these awful visitations. We allude to the neglect of cleanliness, and the insufficiency or bad nature of the diet of the common people. A pestilence always primarily and principally attacks the poorest and dirtiest portions of a community; such was the case in London, Marseilles, and Moscow. No fact can be better attested than that European cities have become freed from the plague in proportion as they have improved in cleanliness and good order. In cities which have not participated in the march of improvement, pestilential epidemics still prevail; and thus, although the plague is scarcely now ever met with in European towns, it is still nearly endemical in those of the East; but even in these it attacks the most miserable and dirtiest portions. "I have always remarked," says Clot Bey, "in Egypt, that low humid places, ill-ventilated houses, the quarters of the indigent, and populous cities with narrow obstructed streets, pay the largest tributes to this disease. Thus at Cairo, Constantinople, and Alexandria, it is always in the populous quarters of the Jews and Armenians, and in the faubourgs and impassable streets, that the disease rages with the greatest intensity."—"In the plague of 1834-35, at Alexandria," says Aubert, "the poorer classes suffered far more than the rich. Their quarters were horribly decimated." Both these authors describe the residences of the poorer classes in the East as fitted rather for animals than men, while their inhabitants suffer under all the afflictions of misery, filthiness, and insufficient diet. Among the great numbers who perished at the plague of Moscow, few of note suffered; and in reference to this point, Lord Clarendon, returning to London after the Great Plague (emphatically called the Poor's Plague), observed that few of his friends were missing. Then, again, how many of the plagues of antiquity were connected with famine. "Certain it is," says Dr. Bateman, "that famine and pestilence have ever been observed together from the earliest ages of the world, and are continually mentioned in combination in the sacred writings. "The plague after a famine," was an old Greek adage. When articles of food are scarce, they also frequently are corrupted, and may thus contribute to dispose the system to a state of disease." The vast increase of facilities for inter-communication, the extension of commerce, and the improvements in agriculture (especially the introduc-

tion of the potato), have rendered famines both much less common and less possible than heretofore.

In the brief notice we purpose to give of some of the principal epidemic diseases, the *Plague* naturally first arrests our attention, from its antiquity, its formerly almost universal prevalence, and its great diminution in modern times. But we are at once met with a difficulty, arising from the vagueness and uncertainty of the medical nomenclature employed in former times; for as the word *plague* was almost indiscriminately employed to designate any great or devastating disease, there can be no doubt that it has been frequently applied to diseases which in modern times have received distinctive appellations. If this **mark** applies, as it does, to some of the diseases raging during the middle ages, yet does it more so to those of a remoter antiquity. And thus doubts have been raised whether the famous plague of Athens was the true plague or not. However this may be, a more frightful example of an epidemic could scarcely be pointed out than this, as described to us by Thucydides, who witnessed it. Transported from Ethiopia, the disease broke forth with the most terrible violence upon the unfortunate inhabitants of Attica, who had filled Athens with a population fleeing from the attacks of the Lacedæmonians during the Peloponnesian war. The Athenians raised a cry, so often repeated under similar circumstances, that the wells had been poisoned by their enemies. The mortality was immense, but the licentiousness and recklessness that prevailed, were even more dreadful. In this epidemic, it is said, the celebrated Hippocrates, the father of medicine, in vain essayed his art; and from the same pestilence perished Pericles, just as his talents and decision were most required by the fickle and ungrateful Athenians. We have accounts of numerous other plagues of antiquity. During the reign of Marcus Aurelius (A. D. 166), one developed itself in almost every part of the Roman empire. The emperor, entering Rome in triumph after obtaining victories in the East, carried with him the seeds of the disease into the capital. It passed the Alps and the Rhine, ravaging severely the countries called by the Romans barbarian.

During the reign of Gallus (252), a celebrated pestilence desolated Europe. Zonaras states that it lasted for fifteen years. Both the Roman armies, which were assembled to repress the advance of the barbarians and the Goths who devastated Italy, became the victims. Procopius and Nicephorus, contemporary historians, describe a terrible plague during the reign of Justinian: commencing in 542, it is said to have lasted half a century. It was carried to Marseilles in 583, and to Paris in 590. The mortality resulting from it has been estimated by some at one hundred and eight millions. Its characters resembled accurately those of the more modern plagues. From this period this disease has continued to manifest itself at intervals in different countries; and at one period it was as common in Europe as it is at present in the East; and Paris and London were almost as frequently infested by it as Cairo or Constantinople.

Ozanam enumerates eleven celebrated plagues

prior to Christ, and about one hundred up to the period of the Great Plague of London. The most celebrated plague of comparatively modern times was the Black Plague, or Death of the Fourteenth Century, the third universal plague, says Stow, since the Deluge. By far the most terrible plague with which Britain has been visited occurred in 1665, and is known in history as the Great Plague. This century had already been very prolific in the disorder, for Sir Gilbert Blanc enumerates forty-five plagues as occurring from 1602 to 1665, of which twelve happened in England. But none of these approached to the extent of the ravages committed by the Great Plague. Commencing at first in St. Giles's, the disease soon spread to the surrounding parishes, and, notwithstanding the most vigilant precautions, entered the city. A general panic ensued; the nobility and royal family soon quitted the metropolis, and were shortly followed by numbers of others; so that a complete emigration into the surrounding districts commenced, and was only checked by the lord mayor refusing to grant certificates of health, and by the inhabitants of the neighboring townships in their own defence refusing to admit the fugitives. Many merchants and others took refuge on board vessels in the river, and were supplied with provisions, &c., from Woolwich, Greenwich, and other parts of the Kentish side. Some of these ships went even out to sea, and others put into various harbors. The pestilence continued to increase, and the misery consequent upon it augmented in like proportion; and from the want of employment for servants, artisans &c., more than forty thousand of that class were roaming about without a home. Superstition and fanaticism added terror to sufferings sufficiently horrible. Tales and predictions of all kinds were circulated; crowds assembled around the cemeteries to see the apparitions, while pretended prophets traversed the streets, announcing with maniacal gestures the entire destruction of the city. The chief thoroughfares became overgrown with grass, whole streets were tenantless, a most awful silence prevailed everywhere, interrupted only by the ravings of delirium, the loud laugh of debauchery issuing from the taverns or the tinkling of the bell announcing the arrival of the pest-cart. The rites of sepulture were necessarily dispensed with; the bodies were promiscuously shot into a huge pit, attended only by the alone characters to whom the duty of collecting them was assigned, and who often performed their horrid offices in a manner the most revolting. The very means adopted to prevent the spreading of the disease sometimes multiplied the number of victims, for when a house was once marked by the red cross, designating the existence of the disease within it, its miserable inmates were prevented for one month all egress; and thus confined and panic-struck, communicated it to each other. The provident cares of the magistracy prevented famine being added to the other calamities; and the contributions of the rich kept pace in some degree with the wants of the poor. Charles II. (with all his faults, he could feel for the distresses of his subjects, as his conduct on this occasion and that of the fire of London shows), contrib-



The Plague.—POUSSIN.

ated £1,000 per week ; and it is said that the almost incredible sum of £100,000 was distributed to the necessitous weekly. At the approach of winter the violence of the disease rapidly diminished, and those of the inhabitants who had fled, joyfully returned to their homes. Although it was computed that nearly one hundred thousand persons had perished, yet in a short time the chasm in the population was no longer visible.

The plague of Marseilles, which occurred in 1720, has attracted much attention. That city had twenty times before suffered from this disease, but never to the terrible extent it did upon the occasion in question. We have no space to enter into any of the details, but can not pass over without notice the admirable conduct and self-devotion of Belsunce, the bishop of that city, a name almost as much honored in France as that of Howard is among ourselves. This excellent man, of whom Pope says—

“ Why drew Marseilles’ good bishop purer breath
When nature sickened, and each gale was death :”

was at once the almoner, physician, and spiritual director of the poor. An eyewitness of his efforts observes : “ On the vast and frightful theatre of our sufferings we had not to seek the prelate. He was always wherever the greatest peril was to be found. His zeal knew no other measure than the wants and miseries of his flock. His firmness was never once shaken by the various forms by which death sur-

rounded him.” Some idea of what he had to encounter, and of the state of Marseilles during the prevalence of this pestilence (which in its progress carried off sixty thousand persons), may be gathered from the following extract from one of the bishop’s letters : “ We have seen all the streets of this town lined on each side by the unburied and half-putrefied dead, and so encumbered by articles of furniture cast from the windows, that we have had difficulty in finding where to place our feet. We have seen the expiring sick become the objects of dread and horror to those to whom nature should have inspired the tenderest and most respectful sentiments for them ; their nearest relatives cast them forth from their own houses into the midst of the streets among the dead, the stench and sight of whom were intolerable. How often have we seen with bitter grief these poor wretches stretch out their trembling hands to us as we approached them, testifying their joy at once more meeting with the sympathy of man, and the consolations of religion prior to death ! How often have we seen them expire before our eyes, often for want of succor. Too often, alas, have we also seen the priests of our great God shrink with terror from their duty, and seek their safety in a shameful flight ; while a vast number of those ministers who continued faithful to Christ were snatched from us in the midst of their zealous and heroic charity. . . . We are now destitute of all succor ; we have no more

meat, nor can I procure persons to distribute what is necessary to the poor, or inter the dead. The doctors who have arrived from Montpellier are frightened at the horrid stench, and will not go out to see the sick until the streets are cleansed. What would they have done a fortnight ago, when I had two hundred bodies rotting under my windows for ten days?"

The government, as some recompense, offered this excellent man a valuable preferment in another part of France; but he refused to quit the city he had risked his life to benefit, and eventually another was presented to him which would not occasion such a separation.

A similar noble example of devotion and disinterestedness was offered by Cardinal Borromeo during the plague which afflicted Milan in 1576.

The middle ages were remarkable for the numerous epidemic visitations they sustained, induced in great part by the miserable condition in which the mass of the people lived. A disease known by the various names of *mal des Ardens*, *St. Anthony's fire*, *feu sacre*, &c., spread epidemically several times over various parts of Europe. It is first mentioned in the chronicles of Froissart for 945. The patient, seized with a burning fever, if he did not die, almost always lost one or more of his limbs by a mortification which destroyed them. Urban II. founded the order of St. Anthony in 1090, in order to succor those afflicted by it. Twenty-five years before this, the body of that saint had been transported from Constantinople to Vienne in Dauphiné; and it was generally believed that the sick arriving at the abbey where these were deposited, were relieved in seven or eight days. Immense crowds of sick arrived from all parts of Europe, many of whom left a limb behind them. Hugo, bishop of Lincoln, being in Normandy, says he saw crowds arrive of every age and sex, many of whom quite recovered, with the exception of the affected limbs, which were never preserved. As late as 1702 a vast number of these dried and blackened limbs were exhibited in the abbey. The disease has been observed on several occasions in much more recent times in France, Sweden, Germany, &c., and the name of *ergotism* given to it, from the belief that it was produced by partaking of bread containing the spur or ergot of rye—a disease of that plant supposed to be produced by the instrumentality of insects. Dr. Bateman doubts the correctness of attributing this disease to spurred rye, and rather refers it to the existence of a state of famine, or at least defective nutrition. It has always been found to occur in seasons of dearth, and to attack chiefly the poor peasantry and mendicants, while the miseries of war have never failed to increase its violence. "Is it probable," he asks, "that the rye through extensive provinces should thus become affected with ergot so as to produce a general epidemic? Is not the disappearance of the disease in our own day to be rather attributed to the improvements in agriculture, which have rendered dearths less frequent and extensive, and to the increase of commerce, which has facilitated the supply of nutritious food to make up for partial deficiencies, than to the disappearance of the disease in the corn?"

One of the most universal diseases which reigned in Europe during the middle ages was the *leprosy*. The precise nature of this disease is now involved in obscurity, but there is sufficient reason to believe that it differed materially from the leprosy of the Jews. By some it has been supposed to have been brought by the crusaders from the East, but receptacles for lepers existed in France and England long prior to the epoch of these expeditions. Probably many diseases of the skin were confounded under this name; however this may be, the disease termed the leprosy spread over almost as great a portion of Europe during the middle ages as the plague itself. Persons so affected were crowded into hospitals (for the support of which large sums of money were devoted), in which they often remained for life, as the disease was usually deemed incurable. Not only did these various physical maladies prevail in Europe at the period in question, but various others sprang up which seemed to involve the intellectual and moral faculties in a participation of the diseased condition. Of this description are the dancing mania, and other convulsive diseases so ably described by Hecker. So, too, the lycanthrophia, or wolf mania, mentioned by the Greek physicians, reappeared in these justly termed dark ages, in which numbers of persons, fancying themselves wolves, imitated the howling of these animals, prowled about the cemeteries by night, and abandoned themselves to the most revolting practices. "Ætius calls it," says Burton, in his "Anatomy of Melancholy," "a kind of melancholy, but I would rather refer it to madness, as most do." The various crusades, and the insane fears and cruel persecutions of witches and sorcerers, might easily be included in the same category.

In modern times two epidemics have especially attracted attention from the amazing rapidity and extent of their diffusion. A short notice of their progress will conclude the subject.

The *influenza* was first described as raging epidemically by the historian De Thou in 1510. In 1557 the disease, commencing in Asia, spread all over Europe, and crossed the Atlantic. During the seventeenth and eighteenth centuries numerous epidemics prevailed, accounts of which having been handed down by competent observers, a general law of the progress of the disease has been pretty accurately deduced. "The disease commencing sometimes as far east as Asia, but at all times proceeding from the northeast of Europe, has advanced westward until arriving at England; it has divided into two branches, one of which traversed the Atlantic to America, while the other has retrograded toward France, Spain, and Italy, to become lost in the Mediterranean. This course is the more remarkable as being that afterward observed by the cholera." These different epidemics have received various names, as "la grippe," "epidemic catarrh," &c., but it obtained its present name in Italy in 1775; from its influence being felt over nearly entire Europe. The last important invasion of this country by the disease took place in 1837. The state of the season prior to its appearance had been most inclement. A hurricane of almost unexampled violence in England, on

the 29th November, 1836, was followed on Christmas-day by a tremendous storm of snow and wind, which was simultaneous over a great part of Europe, so that snow fell even in Lisbon and Palermo, while in England all intercommunication with the provinces was arrested. Snow, too, unknown to the oldest inhabitant, was also seen in Canton; and the French army at Constantine (in Algeria) was impeded for three days by its heavy fall. Including slight cases, Dr. Holland calculates that in the January following, at least half the population of London were suffering from influenza. A month later it affected a like proportion at Paris, and then spread into Spain and Portugal. A similar epidemic prevailed in Australia at the end of 1836, simultaneously with the first appearance of the disease in the north of Europe. As to the cause of the disease, it is involved in obscurity. The influence of atmospheric changes and extraordinary seasons, and many other circumstances, have been adduced and examined, but have proved insufficient to account for the phenomena.

The mortality from influenza is by no means so great as that resulting from most other epidemics, but it is really greater than apparent, by reason of its laying the foundation to several diseases which do not terminate fatally until it has disappeared. The aged are especially sufferers from it.

Both from its recent occurrence, and from its very extensive diffusion and great mortality, the epidemic of 1832, termed the *cholera*, must be fresh in the recollection of most of our readers, and we will content ourselves with an abridgment of Dr. Wilson's historical account of its progress. Although the Bramins maintain that this disease is described in the writings of Dhawantari, a mythological personage resembling the Esculapius of the Greeks, yet we have no reason to believe it ever raged to any considerable extent in India prior to 1817. During August of that year it broke out at Jessora, and in a few weeks ten thousand persons perished; conveyed thence to Calcutta, more than two hundred individuals became its victims every day. Spreading over the entire province of Bengal, the pestilence reached the grand army, then acting under the Marquis of Hastings on the banks of the Sinde, which consisted of ten thousand soldiers and eighty thousand camp followers. His camp was soon converted into a vast hospital. In one week nearly a tenth part of the army was destroyed, but the disease was at that time arrested in the camp by a change of its locality. From the army and from Calcutta the cholera spread over all the provinces of India; and in 1818 and 1819 it reached the coasts of Coromandel, Ceylon, and the Indian Archipelago. In the Philippine islands the natives accused the Europeans and the Chinese of magic, and fifteen thousand lives were lost in the struggle that thence resulted. It ravaged China in 1820, and passed the northern wall into Mongolia in 1821. In 1821 also it obtained admission into Arabia and Persia; at Muscat ten thousand persons perished, and in eleven days one third of the whole of the inhabitants of Bussorah fell victims. In this year it reached Bagdad, then besieged by the Persians. In 1822 Aleppo became infected, and for

three days three hundred persons daily perished. In 1823 it had arrived at the western shores of the Mediterranean, when its course became arrested for some years. In 1831 it appeared at Mecca, on the arrival of crowds of Moslem pilgrims from India, Persia, and other countries believed to be suffering from the disease. In four days twenty thousand of their number are said to have perished. Egypt, which had hitherto escaped, by reason, as was supposed, of the rigid quarantine enforced by the pacha, now suffered in its various towns (to which the pilgrims retreating from Mecca resorted), all the most aggravated horrors of this disease.

Although as early as 1823 the cholera had been carried by the retreating Turks from the ports of the Persian gulf to the borders of the Caspian sea, and hence to the Russian port of Astrachan, yet, as it remained in an almost quiescent state, it exacted little attention until 1830, when it reappeared at Astrachan, reimported, as was supposed, from the southwestern shores of the Caspian. In Astrachan four thousand perished, and twenty-one thousand in the surrounding provinces. In September, 1831, the disease had reached Moscow, and raged there, with the snow covering the ground, and the thermometer often 35° below zero. Notwithstanding every precaution derivable from military cordons and quarantine, it penetrated to St. Petersburg in the same year, and thence spread over Poland, Prussia, and Germany. It is supposed to have been first imported from Hamburg; however that may be, it is certain that it manifested itself at Sunderland, to the vicinity of which town it was at first confined. In February, 1832, however, it reached Edinburgh and the shipping in the Thames, and in March Dublin was attacked. Although on its arrival in England the cholera was the same virulent disease which it had manifested itself to be elsewhere, yet it did not spread to the same extent in that country as on the continent. The epidemic, now having reached the extreme verge of western Europe, divided into two branches; one of these pursued its course westward across the Atlantic, until it reached the American continent, whence it spread over the United States, Canada, and part of South America; the other branch turned toward the southeast, and invaded France, Italy, and the Peninsula. The proportionate mortality at Paris was much greater than that which had occurred in London. To the horrors of the pestilence were added those of a popular tumult, originating in the belief that the infliction arose from the wells and fountains of the city having been poisoned. In the city of Naples the most rigid quarantine regulations were in vain put into force in order to prevent the spread of the disease. All persons affected were crowded into hospitals, and all intercourse with them forbidden, while those who had attended upon them were sent to the lazarettos. The consequence of all this was the production of a terrible panic; thousands of the inhabitants left the city, and among those who remained violent tumultuary assemblages occurred; these could only be allayed by the king traversing the streets in person, and partaking of the bread said to be poisoned, and the abandonment of the obnoxious quarantine regu-

lations. The cholera has not always proceeded step by step in its progress, but has broken out in various and distant points, each forming new and separate centres of infection. Thus many places entirely escaped, as the kingdom of Hanover, and many districts in Germany and France; while in England, according to Sir James Clark, only two hundred and thirty-five towns and forty-one counties were infected. In all countries wherein it is not native, the disease has been found to subside in two or three years after its appearance; but it still continues to exist in India, and under a favorable combination of circumstances it may again become epidemic, and, passing its present limits, again devastate Europe and America.

As to the cause of this disease all at present is mere conjecture; and the various hypotheses attributing it to the influence of season, diet, &c., will not bear examination. It is certain that, like most other epidemics, it especially affects the poorer classes, and of these the aged are its especial victims. This is alike the case in India and in Europe. Excesses in diet also especially predispose to it.

Although the diseases which we have alluded to above are those which usually manifest themselves in an epidemic form, yet may a variety of others occasionally prevail in a similar manner; this is especially the case with cutaneous and febrile affections; thus, the scarlet fever, measles, and small-pox, frequently prevail epidemically; and one of the most destructive diseases met with in warm climates is the epidemic yellow fever, so periodically prevalent in the south.

USE OF SMALL BIRDS IN DESTROYING INSECTS.

WE would say a word or two respecting the benefits and injuries imputed to sparrows, linnets, and other small birds. That they are occasionally mischievous can not be denied, though it is but fair to add, that they also, like the rooks, repay us by a considerable balance of good. That the bullfinch feeds on the buds and seeds of trees, there can be no doubt, and that the chaffinch, though by many considered as a pure feeder on insects, does the same, particularly in early spring, when he inflicts ruinous injury on the sprouting crops of several plants, is equally true. Sparrows, too, burrow in our stacks, and consume a certain quantity of corn; not, indeed, in the same serious quantities that another bird does, called the snow-bunting; these birds, in hard winters, come from the north in prodigious flocks, and, where they take up their quarters, become quite a nuisance; not so much by what they consume, as by what they destroy, which they do thus: In search of grain they frequent the stack, and then seizing the end of a straw, deliberately draw it out. To such a degree has this been done by them, that the base of a rick has been found entirely surrounded by the straw, one end resting on the ground, the other against the stack, as it slid down from the top, and as regularly placed as if by hand, and so completely was the thatching

pulled off, that it was found necessary to remove the corn.

That some guess may be formed of the possible extent of good or evil occasioned by small birds, we annex the following result of observations, on the precise quantity of food consumed by certain birds, either for their own support or that of their young, remarking at the same time, that the difference observed in the instances, may be partly accounted for by the different quantity of food required by young birds, at successive periods of their growth.

Sparrows feed their young 36 times in an hour, which, calculating at the rate of 14 hours a day, in the long days of spring and summer, gives 3,500 times per week; a number corroborated on the authority of another writer, who calculated the number of caterpillars destroyed in a week to be about 3,400. Redstarts were observed to feed their young with little green grubs from gooseberry-trees, 23 times in an hour, which, at the same calculation, amounts to 2,254 in a week; but more grubs than one were usually imported each time. Chaffinches at the rate of about 35 times an hour, for five or six times together, when they would pause and not return for intervals of eight or ten minutes; the food was green caterpillars. The titmouse 16 times in an hour.

The comparative weight consumed was as follows; a greenfinch provided with 80 grains, by weight, of wheat, in 24 hours consumed 70, but of a thick paste, made of flour, egg, &c., it consumed upward of 100 grains. A goldfinch consumed about 90 grains of canary-seed in 24 hours. Sixteen canaries consumed at the average rate of 100 grains each in 24 hours.

The consumption of food by these birds compared with the weights of their bodies, was about one sixth, which, supposing a man to consume food in the same proportion to his weight, would amount to about 25 pounds for every 24 hours!

IRRESOLUTION is a habit which creeps upon its victim with a fatal facility. It is not vicious, but it leads to vice; and many a fine heart has paid the penalty of it at the scaffold. Trifling as it appears in the wavering steps of the young, as they grow older its form changes to that of a hideous monster, which leads them to destruction with their eyes open. The idler, the spendthrift, the epicurean, and the drunkard, are among its victims. Perhaps in the latter its effects appear in the most hideous form. He knows that the goblet which he is about to drain is poison, yet he swallows it. He knows, for the example of thousands has painted it to him in glaring colors, that it will deaden all his faculties, take the strength from his limbs, and the happiness from his heart, oppress him with foul disease, and hurry his progress to a dishonored grave; yet he drains it under a species of dreadful spell, like that by which small creatures are said to approach and leap into the jaws of the loathsome serpent, whose fiendish eyes have fascinated them. How beautiful and manly is that power by which the resolute man passes unmoved through these dangers.



Remains of the Ancient Port of Sidon.

ANCIENT NAVIGATION AND COMMERCE.

Soon after the establishment of their monarchy, the Egyptians are said to have opened a trade between the Arabian gulf or Red sea and the western coast of the great Indian continent. The commodities which they imported from the east, were carried by land from the Red sea to the banks of the Nile, and thence conveyed down that river to the Mediterranean; but, on the whole, the maxims and austere manners of the Egyptians were highly prejudicial to commerce, and the most profitable, and rapid source of individual wealth soon declined, Egypt and became only interested in the manufacture and worship of gods of her own creation, and dwindled into a band of religious bigots.

The situation and circumstances of the Phœnicians, naturally, says a modern writer on this subject, "led them to look to commerce, as the only source

whence they could derive opulence or power; and accordingly, the foreign trade carried on by them, particularly from Sidon and Tyre, became more extensive and important than that of any state in the ancient world. Their ships not only frequented all the ports of the Mediterranean, but they were the first who ventured beyond the ancient boundaries of navigation; and passing through the straits of Gibraltar, they visited the western coast of Spain and Africa."

But who were those bold adventurers, called Phœnicians, and where was their country?

The Phœnicians were a people inhabiting a small territory on the Mediterranean sea, extending from Aradus on the Eleuthrus, to Tyre. They possessed about 4,238 square miles, rather poor and sandy, and of little value, it would seem, for agricultural pursuits. Though the Phœnicians were proud of owning many great cities, Sidon, now known as *Saida*, was their

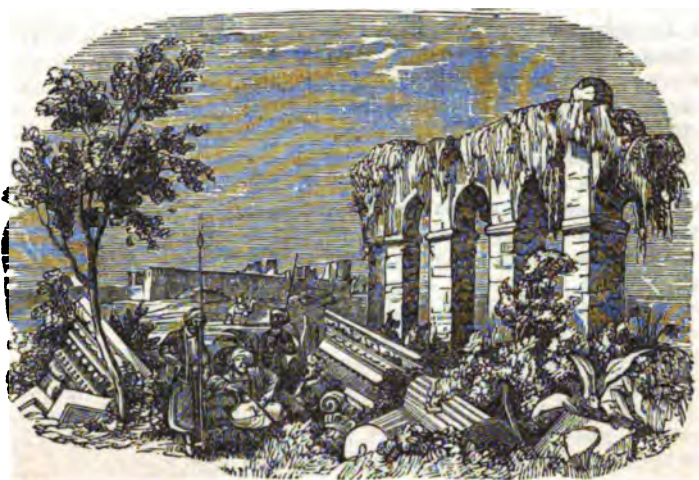


Island of Aradus.

principal strong hold, and celebrated for its many valuable species of manufactures. Glass-making, in that ancient city, was carried to a high degree of perfection, which probably enjoyed as such reputation for the beauty and ingenuity of its work, as Venice does at this time for the perfection of the same art. Next in rank, and afterward, of far greater dignity and importance, was Tyre, known abroad, particularly, for its celebrated *die*, called the Tyrian purple. There were two cities of this name—old Tyre, and new Tyre. The latter was built on an island, near the first. Aco was another rich and populous city, —now the humble town of Acre. Another was Berytus, famous for educating lawyers. These, with some others of less notoriety, joined interests, and constituted a confederacy, dependant on Tyre, which was the head and focus of intelligence, wealth, and power. This union exerted its greatest force, and took its highest rank among other nations, between six hundred and a thousand years before the Savior. Placed as they were, on a coast of considerable extent, with a back country too poor for rearing herds, they were obliged to find employment on the water, as a last resort. Originally, like most of the orientals, they probably roamed from district to district, wherever pastures yielded the most abundant supply; and this is inferred from an intimation that they roamed even in Palestine, before the twelve tribes under Moses entered upon it. Being an ingenious people, of industrious and persevering habits, it was no very singular conversion that they should become skilful, as seamen. When the Jews entered the Holy Land, 1440 years before our Savior, Sidon is spoken of as the *great city*. It must have been extremely celebrated and aged, too, for even Homer alludes to Sidon, as a manufacturing city. So bold had they become on the ocean, and so ambitious, too, that 1200 years before Christ, the great

city, alone, began a colonial settlement in Africa. Some idea of their perseverance may be gathered from the circumstance, that they sent ships to Tarsish, which was some part of the southwest coast of Spain, in company with the Jewish fleet belonging to Solomon. Having no disposition for wars or warlike pursuit, the Phœnicians, by a quiet, unobtrusive policy, which it were better for the world if still practised, sought out countries for colonization, which others cared nothing about, or else went entirely beyond the reach of those who might indulge jealousies against their operations. Their vessels multiplied prodigiously, and an abundance of suitable timber growing on their own shores, furnished materials for any multiplication of vessels which they might choose.

History furnishes no minutæ, till the year 1000 before our own era, when Hiram concluded a commercial treaty first with David, and then with his royal successor, Solomon, one hundred years before Ithobal was on the Tyrian throne, who was the father of the notorious Jezebel. On account of the amazing wealth acquired by the citizens, an avaricious desire was enkindled among their neighbors, which led to altercations, and finally to the revolt of some of their own important cities. For five years at one time, the Assyrians besieged Tyre, but were obliged to relinquish their intentions of subverting it, in consequence of the entire overthrow of their fleet of sixty vessels by twelve Tyrian ships. In point of wealth, political importance and true national grandeur, for more than a century after this naval success, Tyre was altogether superior to the Holy Land. The government at last, in an ambitious scheme of further aggrandizement, formed an alliance with Zedekiah, king of Israel, against that haughty Napoleon of the age, Nebuchadnezzar, who proving strong for them, broke down all opposition, and after a siege of thir-



Remains of the Port of Ancient Tyre.

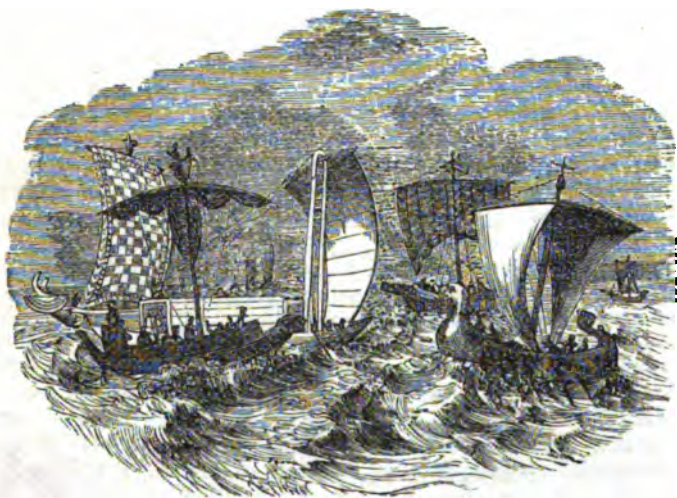
teen years, took Tyre a prisoner, bound her in the iron chains of vassalage, and drove her to such misery, degradation, and poverty, that to recover was impossible; completely fulfilling the very spirit of the prophecies against the wicked city, whose destruction was explicitly foretold. The inhabitants ran for safety; a governor, styled a king, administered the government, in its declension, by appointment of the Babylonish kings.

Afterward, we find this same enterprising people under the surveillance of Persia; and in the fleet of Xerxes at the famous battle of Salamis, two Tyrian admirals were in command, as celebrated seamen. So we might pursue the ill-fated Tyre, through endless misfortunes, down to the year of 1099, when the crusaders, sent on their mad career by Peter the Hermit, made old Tyre a focal rendezvous for their forces.

The Mediterranean was the ocean, whose borders the Phœnicians well understood. From the simple business of carrying articles from one part to another,

they must, at an early date, have become extremely familiar with the theatre of their maritime adventures. They visited Cyprus, Greece, Sardinia, Sicily, Africa, and certainly Spain, or Tarshish, whence their precious stones and metals must have been derived, with the exception of the gold brought from Africa. Preserved fruits, always a luxury, employed an amazing number of carrying vessels for the supply of the home consumption, separately from those of other nations and colonies, who depended on the Tyrian seamen.

Solomon, therefore, after the settlement, it seems, of a commercial treaty with Hiram, the reigning monarch of Tyre, fitted out large fleets of what were or are denominated ships in our translations, chiefly navigated by Tyrians, which sailed from the Arabian gulf to Tarshish and Ophir, whence they returned after a protracted voyage, with such valuable cargoes, that there was a manifest diffusion of wealth and splendor throughout all Judea. It has, however, been remarked, that the bigoted, selfish, austere



Ancient Egyptian and Roman Ships.

character of the Egyptians operated against their success in navigation; and so it was with the Jews. Their institutions were completely unfavorable to commerce, and therefore they never became distinguished navigators. While Solomon lived, or rather, in the early part of his reign, his popularity, love of architectural embellishment and bold policy, wealth rolled into the holy city of Jerusalem in a prodigious manner, even surprising to the people themselves; as their historians have recorded the marvel, that Solomon made silver to be as stones. They were a people expressly set apart by the Divine will to be the organ of communication between God and other nations, and it could not be expected that they would long succeed in a pursuit so diametrically opposite in character to the spirit of those institutions which had for their express object, the preservation of the true oracles of God. After Solomon's death, when civil commotions became frequent, commerce was still more neglected, and finally ceased to be conducted altogether.

Though the Jews were a calculating people, and almost invariably successful in trade, they were never distinguished for great energy of character in that particular line; nor does it appear that they ever felt a disposition to hazard anything by foreign intercourse. Thus, though the king owned fleets, there is no reference made to merchants, which presupposes a royal monopoly. In small dealings, and the exercise of a meek kind of patience, enduring beyond parallel in others, the Jews, even in the 19th century, accumulate riches by small trade. Another circumstance contributing to satisfy the Jews in the reign of Solomon with what had been done, was the fact that the temple was completed, and as gold, and silver, and precious stones, were ostensibly procured for no other purpose than enriching and ornamenting that remarkable edifice, there was no disposition for further exertions in foreign trade. As the Jews were not good mechanics, and were never engaged largely in agriculture, it is difficult to ascertain what they exported to procure their richly-laden vessels with. Instead of circulating freely, the tendency of the precious metal was directed into the treasury of the temple for the service of religion. Whoever investigates the vast amount accumulated by David, probably by a direct tax and by offerings, will at once discover that little or nothing of this kind was ever sent away.

The Carthaginians applied themselves to commerce and active navigation, with ardor, ingenuity, and wonderful success; but as the Phœnicians had already engrossed the trade of India, their adventures were generally directed toward the north and west. Following the course which their enterprising contemporaries, the Phœnicians, had opened, they extended their voyages beyond the immediate shores of the Mediterranean, visiting not only all the coasts of Spain, but those of Gaul, and lastly, Britain. They also made voyages of discovery in various directions, and thus established a commercial intercourse with places which were before wholly unknown to them. But whatever species of knowledge they acquired in this way, was kept carefully concealed from the people of other states.

There is reason for believing that the most common class of war-ships were slightly constructed, and in their auxiliary attendance upon the land forces, usually followed the borders of the land. It is moreover inferred that whole fleets were even brought to the water's edge, in ordinary engagements, quite as often as they remained at sea. Had it been otherwise, such absolute overthrow could not have been the consequence of an unexpected surprise by a wary enemy. A few instances only are on record, where any part of a flotilla escaped, in the subjugation of a marine force.

The republic of Carthage formed an alliance with Xerxes, king of Persia, whose whole ambition centered on one grand object, which was nothing less than the entire extirpation of the Greeks, whom he considered his irreconcilable enemies; yet he conceived it impossible to succeed in the bold design, without the co-operation and assistance of the Carthaginians. A treaty was therefore concluded between them, in which it was agreed that they should invade Sicily, &c., while Xerxes marched in person into the heart of Greece. The preparations for this war of extermination lasted three years. The army consisted of three hundred thousand men; and the fleet, which is more particularly the object of interest, in this discussion, amounted to two thousand ships of war, and over three thousand small vessels of burden. Hamilcar, the best seaman and general of the age, sailed from Carthage, with a formidable host, to Panormus, the present city of Palermo. Naval commanders were as often taken from the army as otherwise—maritime experience having no influence with the senate, in making those important appointments. A similar course is pursued by the Turkish government, in our day. An admiral is taken from the Seraglio to command the whole naval force of the empire, without, perhaps, ever having been out of sight of land; and for any supposed incompetency, he may be degraded from the pinnacle of distinction to a common soldier, the next day. A terrible battle was fought between the invading army and the Greeks residing at Hymera, a city in the vicinity of Palermo, under the generalship of Gelon, a man of mighty powers. He entirely overthrew the army, and burned every vessel in the fleet. Now this could not have been accomplished, unless, as already supposed, the vessels were like shallops, and actually drawn upon the beach. It is very certain that they were all propelled by oars, from another curious fact, which we find in the memoirs of Dionysius, the celebrated tyrant of Syracuse.

Dionysius, at a certain period, 404 years before the Savior, concluded a peace with the Carthaginians, with no other view than to get time to establish his new authority, and make the necessary preparations for the war which he meditated against them. As he was very sensible how formidable these people were, he used his utmost endeavors to enable himself to invade them with success, and his design was wonderfully well seconded by the zeal of his subjects. The fame of this prince, the strong desire he had to distinguish himself, the charms of gain, and the prospect of the rewards which he promised those

who should show the greatest industry, invited from all quarters into Sicily, the most able artists and workmen at that time in the world. All Syracuse now became, in a manner, an immense workshop, in every part of which men were seen making swords, helmets, shields, and military engines, and preparing all things necessary for building ships, and fitting out fleets.

The invention of vessels with five benches of oars was at this time, very recent, for till then, those with three had been used. This remark furnishes another link in the chain of our inquiry, and not only clearly demonstrates that oars were the propelling power, but that ingenuity had discovered a method of applying a still greater human power, by the addition of two more seats or banks. Afterward, however, in the commencement of the first Punic war we find mention of another improvement in the government vessels, viz., the addition of a crane, by which the enemy's vessels were grappled. And again, in this memorable war, so long and so bloody, in a recital by Polybius of an engagement between the Romans and Carthaginians, on the coast of Myle, Hannibal, the Carthaginian, admiral over 330 vessels, stood on board of a galley with seven banks of oars, which had once belonged to Pyrrhus. We perceive further progress in naval architecture, by this apparently incidental remark, as more power was gained, and greater tonnage or capacity secured. But the fleet was nearly all destroyed, and the commodore escaped from his admirable galley, in a small boat. The Roman fleet, with which it contended, numbered 330 vessels, carrying 140,000 men, each vessels having 300 rowers.

In the second Punic war, we find mention made of the lightness of the Carthaginian brigantines, which enabled them to run under the sides of the large Roman ships, so as to break their sterns and rudders. Scipio, however, attacked this formidable navy, in the terrace which had been raised for its protection at the mouth of the harbor, and made a dreadful capture.

That the primitive Carthaginians were an honest class of merchants, we have the testimony of Herodotus. In remarking upon the commerce of the Carthaginians, in connexion with other statements, he says: "We have the same authority of the Carthaginians, to affirm that beyond the columns of Hercules, there is a country inhabited by a people with whom they have had commercial intercourse. It is their custom, on arriving among them, to unload their vessels, and dispose their goods along the shore. This done, they again embark, and make a great smoke from on board. The natives, seeing this, come down immediately to the shore, and leaving a quantity of gold by way of exchange for the merchandise, retire. The Carthaginians then land a second time, and if they think the gold equivalent, they take it and depart; if not, they again go on board their vessels. The inhabitants return and bring more gold, till the crew are satisfied. The whole is conducted with the strictest integrity; for neither will the one touch the gold till they have left an adequate value in merchandise, nor will the other remove the goods till the Carthaginians have taken away the gold."

Though the country of the Greeks was nearly surrounded by the ocean, giving them spacious bays, and secure and beautiful harbors, and although beautifully appearing islands, rich in the spontaneous productions of the earth, and which are visited at this day, on account of their fertility, their produce, and their classic associations, bordered their coast, they paid little attention to maritime pursuits, and long neglected to avail themselves of the advantages so lavishly bestowed upon them by nature.

Indeed, centuries appear to have rolled by, before they became even particularly interested in the initiatory processes of commerce. Beyond the Mediterranean, they had no knowledge, or that only which was of no consequence to them in navigation. With the colonies of their own nation they kept up an official intercourse, but exporting and importing appear to have been altogether a matter of convenience, rather than one of moment. To Asia Minor, therefore, Italy, and Sicily, they made voyages, but what articles were considered desirable in trade, besides gold and silver, has not been transmitted to us. They indeed occasionally visited some ports in Egypt, in the southern provinces of Gaul and Thrace, or in passing through the Hellespont, they viewed the scenery of the Euxine sea. All the Grecian knowledge of geography was limited.

When Alexander the Great made his expedition to the east, it was calculated to increase the boundaries of geographical learning. Alexander was a man of sagacity, availing himself of the discoveries of others, and turning them to the best possible account, in aggrandizing his own throne. He observed with singular satisfaction the resources which commerce creates; and in Tyre, there was obviously no other mode by which the people could have become so extremely rich in precious things, but through their ships. He immediately resolved upon a plan to give a sudden splendor to the empire which he was proposing to create, by constituting its capital the focus of all the commerce of the world, as well as the dwelling-place of the greatest warrior the world had ever seen. With such views he founded the city of Alexandria, near one of the estuaries of the celebrated river Nile, in Egypt, which he distinctly foresaw would command the trade of the Mediterranean and the Arabian gulf at the same time; and with them, a hope was evidently indulged of commanding also the trade of the east and west.

Certainly, the spot selected was judiciously chosen as the experience of successive generations has proved. Alexandria very speedily rose to a high degree of importance, and ultimately gained the desirable reputation of being the greatest commercial city in the world. During the subsistence of the Grecian empire in Egypt, and finally, through all the succeeding and tremendous revolutions of those and the neighboring countries, commerce, and particularly that of the East Indies, continually flowed into the great reservoir which the sagacity of Alexander designed for it, till the time when the discovery of the passage by the Cape of Good Hope opened a more convenient channel to the growing maritime powers of modern Europe.

Alexandria is now a port of entry, and was once the principal mart of all the oriental trade. The merchandise was unladen at Pontus Muris, a small town on the west coast of the Red sea, and afterward conveyed on camels to a depot of Thebias, and thence down the river Nile to the port, which is four days' journey from Cairo.

It is generally known, without doubt, that this trade has greatly enriched all who have been engaged in it. It is to this peculiarly fortunate species of trade that we are to look for an explanation of the vast increase of King Solomon's treasures, and which enabled him, with the aid of the metallic wealth left by his father David, to erect the magnificent temple at Jerusalem. David, the second king of the Jews, by overcoming Idumæa, say the historians, became master of Elath and Eziongeber, two important towns on the eastern shore of the Red sea. From these two ports, Solomon sent fleets to Ophir and Tarshish, which invariably brought back incredible riches. In one voyage, the royal merchant received 450 talents, (2 Chronicles. viii. 18), equal to \$14,386,600. This valuable traffic ultimately passed into the rapacious hands of the Tyrians. They sent all merchantable articles by way of Rhinocalura, a place lying between the confines of Egypt and Palestine, to Tyre, whence they were distributed by them over the then called western world.

When the Ptolemies succeeded to the throne of Egypt, they drew all this prodigious trade into their own kingdom, by erecting the city of Berenice. For centuries, Alexandria remained the centre of commercial spirit, till as recently as within two hundred years, when a way was discovered of visiting the old places *via* the Cape of Good Hope. It is well to keep in recollection the deep interest the ancients felt in navigation, as exhibited in the facilities afforded to mariners, in finding the *termini* of their voyage. There was erected, for the convenience of trade, on the island of Pharos, near Alexandria, a tower called the Pharos, on the top of which a fire was kept constantly burning. This is the first lighthouse of which we have any record. Sostratus, a distinguished architect, constructed it, by order of Ptolemy Philadelphus, who expended 800 talents (nearly \$811,000) upon it. It is not very strange that, with such vast expenditures, it became one of the seven wonders of the old world. The builder inscribed on the tower the following line, which historians have carefully preserved: "*Sostratus Cnidius, Dexiphanis F. Dii servatoribus, pro navigantibus.*" "Sostratus the Cnidian, son of Dexiphanes, to the protecting deities, for the benefit of seafaring people."

In looking back upon the early history of Rome, commerce seems to have been little understood, or carelessly neglected. They were a people *sui generis*, who made war a profession, and seemed to look with cool contempt upon any other employment, or upon any wealth or possessions, which did not come to them by the subjugation of enemies. They were a nation of imperial robbers, who, on the slightest pretext, neglected no possible means of overcoming by bloodshed and slaughter, whoever dared to question

their right to universal dominion. The glory of conquest was invariably accompanied by the spoils of the camp, the individual property of the general, the chief and the king; and their governors at once riveted the fetters of Roman servitude on the desponding provinces which their arms had subdued. It is not strange, then, that commerce, which implies a patient but persevering attention to foreign traffic, attended with various personal dangers to the adventurer, as well as hazard of property by the elements, had no charms for Roman legions. By the sudden conquest of large territories, they at once availed themselves of the entire wealth of a country—a much more expeditious process of accumulating a fortune than by making voyages to distant countries, dependant on the winds, and the condition of foreign markets.

Such was the constitution of the camp, that each soldier who survived the overthrow of a city or country, received a prize, proportioned to his rank and services; and on extraordinary occasions, they were allowed to pillage uncontrolled, as many days in succession as the commander of the forces gave permission. In such cases, the public coffers were first regarded, and in the next place, the soldier obtained a gratuity, over and above his regular army compensation. Such men were wholly unfit for seamen; for where there was no thrilling excitement, there was no inducement, and where there was no spoil, there was no Roman glory to be achieved.

It is not, however, pretended that no advantages were gained by commerce, by the Romans. They permitted maritime people to pursue their accustomed employment, and took special care to grasp the avails of their adventurous industry. Eventually, the gigantic power of Rome placed her iron hand on all the best portions of the earth. The vigilance of their magistrates, and the restless spirit of the general government, no less intelligent, at times, than active, gave so much security to the subject, that commerce insensibly began to flourish, almost before it was suspected to be of any consequence, or of any utility, to the immense machine which constituted the Roman Empire.

The Carthaginians, too, situated at the centre of the Mediterranean, and stretching out their arms eastward and westward, had once embraced in their commercial monopolies nearly the whole world. They sailed to distant countries, to purchase, at a cheap rate, commodities which they afterward sold at the dearest price. From Egypt, they brought fine flax, corn, paper, sails and cables for ships; from the coasts of the Red sea, spices, frankincense, perfumes, gold, pearl, and precious stones; from Tyre and Phœnicia, purple, scarlet, rich stuffs, tapestry, costly furniture, and various curious productions of art; and from the western world, they carried tin, iron, lead, and copper. It was literally true, they were lords of the sea, during the rage for commercial enterprise. The most eminent persons were not ashamed to be interested in such profitable trade. They applied themselves as assiduously as the meanest shopkeeper. By such means, they held the sceptre of the ocean, and raised the commonwealth

to the highest pinnacle of wealth and earthly grandeur. Rome envied them their prosperity, which a war of forty years hardly sufficed to subvert. In order to subdue her haughty and imperial rival, Roman ingenuity was at last compelled to resort to the mean plan of depriving the monstrous city of the benefit of its commerce. Commercial treaties have their principal origin in the agreements made between these two powerful nations. Twenty-eight years before Xerxes invaded Greece, at the expulsion of the kings, a treaty is mentioned, in which Africa and Sardinia are spoken of as the property of Carthage. It was stipulated that neither the Romans nor their allies should sail by Fair Promontory, now Passaro, near Carthage, and that such merchants as should resort to that city for traffic, should pay certain specified duties. It farther appears, by the same instrument, that the Carthaginians were particularly careful to exclude the Romans from all countries subject to themselves.

Strabo informs us that a man whose eyesight was good, might, from the coast of Sicily, count the vessels, as they came out of the port of Carthage. This is thought to be incorrect, the distance being seventy-five leagues.

With the subjugation of a world came a taste for luxury, and the Romans soon acquired a morbid appetite for the product of distant regions. Commerce alone could administer to their wants; the trade to India, through Egypt, was carried on with unprecedented vigor, and astonished those lords of the earth with the results of the application of industry to maritime expeditions.

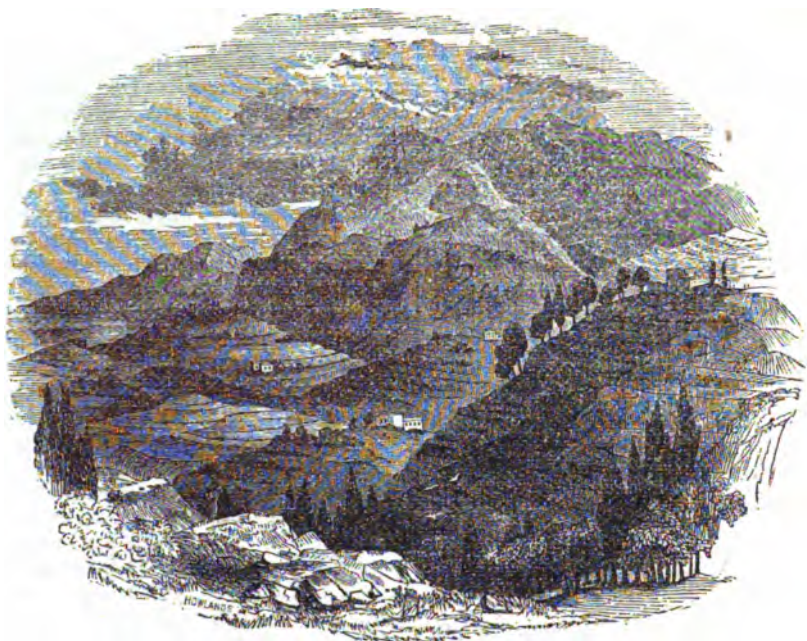
The pilots who sailed from Egypt to India first ventured to quit sight of the land, relying—so imagines the historiographer—upon the uniformity of the tradewinds, to waft them to their destined port; though we fully believe they were in possession of some unerring guide, most likely a compass, rude perhaps in structure, but on which reliance could be placed, in finding the port of destination. However, they boldly sailed from Ocelis, at the head or mouth of the Arabian gulf, directly across the ocean, till they reached the coast of Malabar. Returning with the eastern monsoon, they carried home the spicery, the peacocks, the pearls, the apes, and the gold, which were procured from places vastly distant from the ports they so fearlessly visited. Misericordia was the depot to which the Indians themselves rolled in the produce and manufactures of the Indies, with the expectation of making sale of whatever they might offer in the market. The Romans exported nothing but money; and in the sequel, this infantile navigation actually drained the empire of its precious metals, which had been procured at the expense of millions of lives. Every year, it was the opinion of statistical writers, four hundred thousand pounds were sent abroad, for the purchase of what were denominated the necessaries of life. The tea-trade with China, which has carried such vast sums of specie from the United States, never to be returned in any form, resembles precisely the Roman manner of obtaining the produce of India, for which one hundred and twenty ships were annually sent.

TIME.

WHEN man surveys the works of art, the magnificent handicraft of creative genius; He erects thrones and demolishes kingdoms, and subjects to his power not only the inhabitants of earth, but the primeval elements of nature. He, in order to the perpetuation of his glorious deeds, builds to himself the mausoleum of fame, rears the lofty pillar, and, with the zeal of an enthusiast, constructs the gigantic pyramid; then contemplates with the satisfaction of a universal monarch, the magnificence of his exploits: but, ah! how delusive are such quick-fading demonstrations of dominion and power, and how evanescent the dreams of ambition and the splendid figments of his supposed immortality; for where is the temple that can successfully resist the innovations of Time. — Though genius may strike out a path ascending to power, fame, and glory, and fancy invest it with all the rich beauties that cluster in the region of imagination, yet the efforts of the bard, who pours his tide of living song to eternize some distinguished hero, will perish amid the flames of an Alexandria, or fade like the dew of morning from the memory of man. History, too, clothed in the gravity of antiquity and possessing the sanctity of a Delphic temple, resembles but the beautiful frost work of an autumnal morn, to perish in the blaze of a revolving sun. Then where can man repose the laurels of his ambition, or where assemble for the inspection of coming generations the magnificent splendors of his name; for temples, domes, and mighty pillars, alike moulder in ruins and slumber in the solemn silence of an awful desolation.

As a demonstration of the unstable permanency of material things, we need not follow in the mournful train of slumbering decay, the sombre memories of fallen kingdoms, empires, and dynasties, amid the ruins of Nineveh, Palmyra, and Heliopolis, once the seats of kingly power and arbitrary dominion; but let us range over the wide extent of our own new and untrodden wilderness, where still exist in solemn grandeur and slumbering ruin the chiseled fragments of temples, walls, and princely cities; rivaling in the grandeur of their ruins the Coliseum of Rome or the entablatures of Thebes. Then how futile and vain are the dreams of ambition, how fatal and delusive the hopes of immortality, when the most permanent constructions of human genius fail to perpetuate, to a few succeeding generations, the glories of the hero, whose throne has been built upon the fragments of former kingdoms, and whose sceptre once perchance was died in the blood of millions. Let man be admonished by the sad history of the past, and confine his exertions to the sphere of usefulness, and he will secure a prouder name than that of the laureled Cæsar, or the bloody Tamerlane.

A body that weighs one pound upon the earth, would weight twenty-seven and a half pounds if transported to the Sun; and an ordinary-sized man would there weigh four thousand pounds.



Terrace Cultivation.

CULTIVATION OF MOUNTAINOUS DISTRICTS.

THE cut at the head of this notice will undeceive such of our readers as are accustomed to associate the idea of almost universal barrenness with a mountainous country. Here they see the mountain slopes cultivated with the utmost care to their very summit; and unless such labors were repaid by the fruitfulness of the soil, we may feel assured that they would soon be applied in some other direction. It must be recollected that the soil of many of the most fertile valleys consists for the most part of accumulated material, washed down from the mountains by the rains, after having previously become softened and decomposed by the action of the elements. In many instances where the disintegration of rocks and mountains is constantly going on, the matter is hurried down by torrents to the rivers and carried out into the sea. By forming terraces on the mountain sides the decomposed substance is stopped in its descent and accumulates sufficiently to form a series of long narrow gardens. In warm climates, if water can be procured, these patches are enriched and beautified by a luxurious vegetation, and the cultivators are amply repaid for their ingenuity and industry. The scarcity of good land or comparative security from oppression may have led in the first instance to this mode of cultivation. While the cultivator of the plains, in countries subject to oppression of all kinds, is constantly exposed to pillage, the mountaineer enjoys a higher degree of security, which is at once evident in the superior industry by which he renders the barren rock fruitful.

In Syria the traveller is frequently delighted at the manner in which cultivation creeps up the hills. The country consists almost wholly of mountain ranges. He rises from the valley to the hills only to descend again into the valley, and is constantly rising and descending in his passage through the country. He sees villages perched on the mountain sides, which Volney describes "as if ready to glide from the steep declivities on which they are built, and so disposed that the terraced roofs of one row of houses serve as a street to the row above them." Occasionally the terraced side of a mountain, with its mulberry-trees and vines, becoming detached by a sudden thaw, does slide into the valley below. On one of these occasions a lawsuit arose between the proprietor of the ground in the valley and the owners of the landslide; but the emir caused both parties to be indemnified for their mutual losses. Soil is so scarce in some parts of the country, that the garden of a convent, situated in a very sterile district, near Mount Horeb, is supplied with earth brought all the way from Egypt on the backs of camels. Here we may expect to find terraced cultivation most assiduously practised, and under the Turkish rule there are political reasons also which render the heart of the mountains a better field for industry than more accessible places. The seaward slopes of the mountains are in general cultivable, while the eastern slopes, toward the desert, are usually barren. The inaccessible parts of the former are often covered with firs, larches, oaks, box-trees, laurels, yews, myrtles, and a variety of wild shrubs, and contain springs of excellent water, the rills from which irrigate the cultivated part of the slope. Here the mulberry, the olive, the vine, the fig, and other plants

useful to man are planted, and every inch of ground is turned to account.

The appearance of a country which is thus cultivated is extremely beautiful and interesting, and the variety of plants which flourish on a small but constantly ascending surface, is much greater than where it is spread out horizontally, as some thrive only at a certain elevation, and could scarcely be produced in hot plains. Dr. Clarke was struck with the highest admiration at the beautiful appearance of the terrace cultivation, and the industry which had made it so. He says, "The road was mountainous, rocky, and full of loose stones; yet the cultivation was everywhere marvellous: it afforded one of the most striking scenes of human industry which it is possible to behold. The limestone rocks and stony valleys of Judea were entirely covered with plantations of figs, vines, and olive-trees; not a single spot seemed to be neglected. The hills, from their bases to their utmost summits, were ever spread with gardens; all of which were free from weeds, and in the highest state of cultivation. Even the sides of the most barren mountains had been rendered fertile by being divided into terraces, like steps, rising one above the other, upon which soil had been accumulated with astonishing labor. Among the standing crops we noticed millet, cotton, linseed, and tobacco; and occasionally small fields of barley. A sight of this territory can alone convey an idea of its surprising produce. It is truly the Eden of the East, rejoicing in the abundance of its wealth. Under a wise and beneficent government the produce of the Holy Land would exceed all calculation."

There is also in Syria and many other mountainous countries a singular variation of climate in places adjacent to each other, and which is productive of corresponding differences in the vegetation of the country. Volney has placed this fact in an interesting point of view: "Syria," he says, "unites different climates under the same sky, and collects within a narrow compass pleasures and productions which nature has elsewhere dispersed at great distances of time and places. With us, for instance, seasons are separated by months; there we may say they are only separated by hours. If in Saïde or Tripoli we are incommoded by the heats of July, in six hours we are in the neighboring mountains, in the temperature of March; or, on the other hand, if chilled by the frosts of December, at Besharri, a day's journey brings us back to the coast amid the flowers of May. The Arabian poets have therefore said that the Sanuin (the highest summit of Lebanon) bears winter on his head, spring on his shoulders, and autumn in his bosom; while summer lies sleeping at his feet."

The mulberry-tree has latterly become so profitable as to constitute a most important source of wealth to the whole country of the Druzes, by the quantity of silk which it enables them to produce. The price of silk has doubled within the last twelve or fourteen years, during which the cultivation of the mulberry has been constantly extending; not only to the exclusion of other trees, but even of garden produce. This, at least, is the case at Beirout, which derives its principal supply of garden vegetables from Sidon, whence they are brought by the peasants of the surrounding country.



Bedouins gathering Fruit.

ENEMY-MAKERS.

THERE are some children who seem as if they could scarcely move a step without breaking or spoiling something. Whatever of a fragile nature they lift or handle, they are sure to let fall or knock over. Whatever they attempt to do, they do ill, so that it would have been far better let alone. If introduced into a garden, their feet find it quite impossible to keep off the parterres, and their fingers to abstain from plucking the flowers. In the parlor, they are perpetually raising unearthly screams from cats and dogs, on whose toes, tails, or feelings, they have trampled, or setting up younger children than themselves into squalling fits, in consequence of pinches, cuffs, and bruises, which they inflict—to all appearance unconsciously. Wherever they go, their course is marked, like that of a hurricane, by the wreck and disorder which they leave behind. All ill luck seems to attend them in all positions and all circumstances, and so many and so bitter are the complaints which they give rise to, that one at length almost pities even while suffering from them.

The enemy-makers are a class a good deal like this department of the juvenile world. We would define them as persons having an unfortunate aptitude, by word and deed, to give offence to their fellow-creatures, each of whom, so offended, becomes of course a deadly foe for life. Enemy-makers are often very meritorious persons. We have known them possessed of some of the most popular of the virtues, besides being clever and amusing. In their general conduct, and even in their general manners, there may be nothing exceptionable. But all this is of no avail against the leading peculiarity. Every now and then they commit some blunder or utter some speech, which throws one of their neighbors into irreconcilable hostility. This person becomes of course a focus or centre for the diffusion of unfavorable sentiments respecting the offender. He speaks ill himself, and engages as many of his friends to do likewise as possible. Thus, a single wry word will perhaps create a score of ill-speakers. It is needless to remark how these foci will at length become so numerous, as to absorb nearly the whole of the offender's neighbors, leaving him hardly one who is willing to keep on fair terms with him.

Lately visiting a friend in the country, we were much pleased with the intelligent, we might almost say brilliant, conversation of a gentleman who was asked to meet us at dinner. It seemed to us a piece of good fortune in the place, to have residing in it a man of a character so rarely met with out of great towns. We were surprised, however, in no small degree, when, afterward conversing with various families, to find that our praises of this gentleman were not well received. In some instances, ladies faintly assented to them with a strained politeness; in others, met them with disdainful sneers and tossings of the head. One gentleman muttered something through his teeth, and another looked black in the face and said nothing. We met the man again, and liked him still better. He came and undertook to be our conductor through the curiosities of the dis-

trict. We became great friends. It was incomprehensible how so pleasant and obliging a person should be unpopular. At length we got a key to the mystery. Our new acquaintance was an enemy-maker. He had, from a strange recklessness, allowed himself on various occasions to say sore things of sundry persons. He had treated one or two foolish and officious individuals with impatience, and allowed them to know what he thought of them. One after another, his neighbors had been thus offended by him, until there were only two or three who would receive him into their houses, or meet him anywhere else. His various agreeable qualities had been in a great measure lost to the circle in which he resided, and himself rendered a kind of Pariah, solely in consequence of a few trivial acts and a few trivial expressions.

It is not to be supposed that the enemy-maker is necessarily an unhappy man. Some may have their moments of regret for the unpopularity into which they have fallen; but generally they are quite at their ease on the subject. This is owing to the peculiar constitution of mind by which they become enemy-makers. The enemy-maker would be described by the phrenologist as a person with large self-esteem and small love of approbation; and such is at once a just and intelligible account of the leading features of his character. Perfectly satisfied about himself, he regards not what his neighbors may think of him. But the bulk of human beings are constituted differently, being liable to conceive great offence if they are not well thought of, or are treated disrespectfully. The enemy-maker, from his own want of this feeling, does not understand or sympathize with it. Himself insensible to both its agreeable and disagreeable affections, he acts very much as if there were no such thing in nature. Hence it is that he is so liable at every turn to come disagreeably across one person or another. But this defect of feeling makes him at the same time able to endure with equanimity the consequences of his unlucky tricks. He may sometimes be surprised at a cool reception from one whom he took for a friend, and think it rather odd that he has not got an invitation from some particular family for a twelvemonth; but he is not apt to be much or long discomposed by such circumstances, everything being made up to him by the satisfaction which he habitually feels with himself.

It is nevertheless a great misfortune to be an enemy-maker, and it would be well for any person who has a tendency to become one, to put himself on his guard against it by the means which his intellect supplies, thus bringing one part of his mental constitution to compensate for the defects of another. Let him be fully aware that, though he feels independent of the approbation of his fellow-creatures, and can not imagine how any one should be otherwise, most are in reality otherwise, and therefore conceive great offence when this sentiment of theirs is wounded. Let it be deeply impressed upon him that, in his intercourse with other parties, the most shining qualities will fail to maintain their attachment or respect, if he does not act delicately with regard to their *amour propre*. Here the flatterer may give him

a lesson, if not an example. It is daily seen that a man of many bad qualities will keep a fair place in society by making himself agreeable to everybody. Just as certainly will the most worthy man fail to do so, if he has a habit of putting his neighbors ill at ease with themselves by biting and undervaluing speeches.

"What care I how fair she be,
If she is not fair to me?"

old Wither sings; and such is the very process of ideas which leads to the enemy-maker being so much scouted. There is nothing more common in literary circles or coteries, than to hear some writer of reputation denied every good attribute, or at least allowed the very faintest praise; the cause, when examined, proving to be that this writer has dropped a contemptuous, and probably unjust expression respecting some favorite member of their set. A single offensive sentence blinds them to his whole merits. In like manner, we have known a first-rate wit lose all character as such with one who had laughed a thousand times at his jokes, on his happening in one unlucky moment to give way to a jest, of which that person was the subject. From that moment, what had formerly been all very lively and amusing became intolerably low and coarse. In fact, the bulk of mankind are affected in their judgments of individuals, to a very great extent, by considerations affecting themselves; and if there be one particle of uneasiness in their own hearts about any one, it is sufficient to depress a saint into a hypocrite, and a philosopher into a fool. How often is merit denied where there is no knowledge of the person whatever, merely because his circumstances excite a little envy! Much more, of course, may this disagreeable affection be excited, if a positive offence be offered. If the enemy-maker would take these things into serious consideration, and endeavor to act with some degree of caution, he might train his judgment to keep him comparatively free of trouble, notwithstanding that he remained unconscious as before of the nature of the wounds which it is his unfortunate tendency to inflict.

Enemy-making sometimes, but comparatively infrequently, arises from a certain want of self-control, rendering it impossible for the party to abstain from saying some smart thing, or acting upon some favorite plan. This is a most unfortunate variety of the tribe, for they are not necessarily insensible to the effects of their delinquencies. A joke—perhaps merely a whimsical association of a couple of words, occurs to their minds, and, though the alienation of a friend, and much consequent vexation, is the certain consequence, they can no more restrain themselves than can the sot when his fatal beverage is placed before him. They take a fancy for doing a particular thing, or following a certain course, probably of quite an indifferent nature, and, though it is sure to cause a swarm of hornets to come about their ears, they are equally incapable of abstaining from it. They always repent afterward, but generally to little other purpose than to deepen the regret which they feel for their imprudence. To this class we say, consider what a word or an action is. It may appear a passing thing of a moment, but yet carry

the seeds of the events of future years. Let no one think a word a light or insubstantial matter. Words are things, as much as if they had the weight of lead or gold. While a word can express the ideas of one mind, and raise ideas and excite to actions in another, it can never be justly held as mere breath, as common thinkers are ready to term it. Let words, then, be used with caution. Retain an offensive one, as you would abstain from shooting a poisoned arrow at a multitude. Upon the shutting of the lips may depend the comfort of many days to come. Why, then, oh why should they, in such a case, be opened?

The late Sir Walter Scott was remarkable for the example which he held up to all men, but particularly to his literary brethren, with regard to enemy-making. In his personal conduct, and in the numerous productions of his pen, he was singularly void of offence. He was not a bitter speaker; he answered all men civilly; he bore with his bores like an angel. Then, as he himself tells us, he had early seen the absurdity of such a course as that of Dryden and Pope, who made all their inferiors their bitter enemies, in consequence of satirizing them, thus exposing themselves to an incessant storm of petty malice, which could not but be a source of constant torment to them. Scott wrote despitely of no man, and, when any silly attack was made upon him, he took no notice, but let it "hum and buzz itself asleep." By this policy, he got through life with more kind regard from his fellow-men than ever before, perhaps, befell one who attained such eminence. We become particularly sensible how admirable his conduct was in this respect, when we contrast it with the paltry viperousness which some eminent literary men ever and anon allow to escape them, as if to show how compatible the best talents are with false taste and an essentially mean and vulgar nature. Enemy-makers of all kinds might be directed to study the character of Scott, as a lesson calculated to be of the greatest benefit in their peculiar case.

After all, in as far as it may be impossible to effect a complete cure of the enemy-maker, we would call for his being regarded a little more gently by the world. He is an unfortunate being, whether as naturally defective in tact or self-control. Then his unlucky escapades expose him to so much inevitable obloquy, and act so injuriously, in most instances, on his fortune. Upon the whole, he is a more fit object of pity than of blame. When any ordinary person of the world experiences a shock from an enemy-maker, let him consider what an unhappy thing it is to have a tendency to act so as to excite hostility; let him reflect how fortunate he himself is in being free from such a peculiarity; and he will be disposed not so much to resent as to forgive.

If the degree of heat upon the different planets is in proportion to their distance from the sun, the average temperature of Mercury will be 333 degrees, 121 degrees above boiling water; that of Uranus 123 degrees below the freezing point.

Mercury's density is equal to that of lead, being the densest planet in the system; Saturn the rarest, has nearly the density of cork.



REV. ROWLAND HILL, A. M.

THE Rev. Rowland Hill merited the esteem and confidence of the nation to which he belonged; and thousands of Christians of all denominations deeply lamented his loss, saying in the language of King David for a distinguished but unhappy nobleman, "Know ye not that there is a great man fallen in Israel?" 2 Sam. iii. 38.

This minister of Christ was born Aug. 12, 1744. He was named after his excellent father, Sir Rowland Hill, Bart. of Shropshire. Mr. Hill was educated at Eton college, and at St. John's, Cambridge, where he took his degree of A. M. At the age of about twenty-two, he preached occasionally at the Rev. G. Whitefield's tabernacle, and the chapel in Tottenham court road, by which he threw difficulties in the way of his ordination.

The bishop of Bath and Wells was, however, induced to admit him to deacon's orders; but not being willing to promise conformity to ecclesiastical order, in refraining from ministerial intercourse with other denominations of Christians, Mr. Hill could not obtain priest's orders. Making but little account of further ordination in the church of England, he declined seeking preferment, and determined on having an independent chapel for his own ministrations in London. He laid the first stone of Surrey chapel in 1783, and in 1784 it was finished and opened. About this period Mr. Hill married Miss Mary Tudway, sister of Clement Tudway, Esq., M. P. for Wells. After about

forty-five years of much domestic happiness, Mrs. Hill departed this life a few years ago, leaving no issue.

Mr. Hill usually spent about six months of the year in London, and the other part of the year officiating at another of his chapels at Wotton-under-Edge, Gloucestershire, or as a deputation for some of the great religious institutions; and through his public ministry, during a period of about sixty-seven years, perhaps no man, unless we except the Rev. John Wesley, has ever borne so much opposition, or been the instrument of so much good, maintaining so upright and venerated a character. Mr. Hill was enabled to prosecute his labors almost to the close of his life. His last sermon to his congregation was on March 31, 1833, on 1 Cor. ii. 7, 8, "We preach the wisdom of God in a mystery," &c. His last public address was on Tuesday evening, April 2, to the Sunday schools assembled at Surrey chapel, on 1 Cor. xv. 58, "Therefore be ye steadfast, always abounding in the work of the Lord," &c. He entered his eternal rest on Thursday afternoon, April 11, 1833.

A great man has fallen in Israel!

The Rev. Rowland Hill was *great in family rank*. Shropshire has for many centuries been adorned and blessed with the family of the Hills. At the time of the Reformation, in the reign of Henry VIII., we find interesting notices of this family. In conversation with our late venerable friend, he stated it as one of his most gratifying reflections in relation to his own family, that one of his ancestors, bearing the name of his reverend father, and his own name, Sir

Rowland Hill, was the first Protestant lord-mayor of London. History verifies this statement. Our readers are aware, also, that Lord Hill, commander-in-chief of the British forces, is a nephew of the late Rev. Rowland Hill.

The Rev. Rowland Hill was *great as a preacher*. Whitefield excepted, perhaps England has never been blessed with a greater preacher. He was sound orthodox, evangelical, and above all, by the blessing of God, exceedingly useful. Mr. Hill could not be compared with Dr. Chalmers or Robert Hall for elegance of style or beauty of diction; but notwithstanding some eccentricities, for those qualities which are adapted for usefulness, especially to the mass of the people, Mr. Hill possessed qualities far superior. We remember after a sermon, a few years ago, from Mr. Hill, hearing a gentleman, who is one of the finest writers of our times, say he was astonished to hear from any one so many excellent things, in the course of an hour, as had been just uttered by Mr. Hill. His popularity continued to the close of his labors.

The Rev. Rowland Hill was *great as a Christian*. Personal piety was the spring of all his moral excellence. Experimental Christianity shed that loveliness over his whole character which shone both in public and private through a long and unspotted life. Mr. Hill's religious principles were those of the British martyrs, in which the whole body of Christians through all ages have been substantially agreed, and which are now held by the pious part of the Church of England, the Church of Scotland, and the principal bodies of Protestant Christians. The great points of Mr. Hill's theology were the following: 'The perfection of the Holy Scriptures as a divine revelation, and the only rule of faith and practice—the essential divinity, the incarnation and atonement of the Son of God—justification through the righteousness and sacrifice of Christ—regeneration and sanctification by the influences of the Holy Spirit—and the resurrection to eternal happiness, as the free gift of sovereign grace through the mediation of Christ. These principles were the constant theme of Mr. Hill's ministry, and the support of his mind in the hour of dissolution.

A short time before he breathed his last, a friend at his bedside said to him, "You will soon be with the Lord Jesus." "Yes," added this great Christian, "and like him too." Thus as he lived he died, thirsting for holiness.

"His soul sustained him in his final hour!
His final hour brought glory to his God."

The Rev. Rowland Hill was *great as a patriot*. Patriotism was the natural fruit of his scriptural piety. For the peace and security, the liberty and prosperity of his country, Mr. Hill labored and prayed. "He went about doing good" to his country, after the blessed example of his Divine Master. And whatever had a manifest tendency to meliorate or improve the condition of the population, found in him a glorious patron. Schools, almshouses, chapels, throughout the United Kingdom, received from his liberal hand a prompt contribution, and eternity alone will disclose the amount of good effected by his liberality, example, and influence.

The Rev. Rowland Hill was *great as a philanthropist*. Beyond mere patriotism, Mr. Hill regarded the whole human race with a refined Christian compassion. His philanthropy was engendered and cherished in his heart by the spirit of God. Contemplating mankind through the medium of the Holy Scriptures, and believing their misery and corruption by the fall could be counteracted and cured only by the saving knowledge of Christ, he was the zealous supporter of every institution formed to promote the extension of the Gospel. Mr. Hill was an active member and a generous friend of the missionary societies, bible societies, Tract society, Religious Book society, British and Foreign School society, Home Missionary society, and other evangelical institutions; believing from the word of God, that "charity to the soul is the soul of charity."

We understand that his regular annual subscriptions to these various societies were about eighty guineas; but we should think that his occasional contributions exceeded *five times* that amount. Many splendid donations and contributions of Mr. Hill we have in distinct recollection, one of £2,700; another of about £2,000; and another of £1,500.

What further need we say of this truly great man? He was a great preacher, a great Christian, a great patriot, and a great philanthropist! Let our readers reflect upon his great principles, drawn from the Gospel of Jesus Christ: and while they embrace and cherish the same, let them remember that the "residue of the Spirit" is with God, and pray that it may be shed forth in plentiful degree, to form multitudes equally eminent with our sincerely lamented friend, the Rev. Rowland Hill.

THE DESIRE OF DISTINCTION

Nothing but immortality can satisfy the mind of man; the mind of man is immortal. The ocean only can fill the ocean's bed. How vain then in man to imagine satisfaction in the acquirement of anything perishable. Was earth our home, then to be ambitious would be wise. But we are bound to immortality; and he who on the Dedalian wings of his ambition seeks happiness in worldly acquisitions, will be sure to fail.

Who that has not observed the restlessness of human ambition? Who of us can say—I am contented? We all look forward to something yet to come. The scenes of to-day disgust us, and we are pleased with the visions of to-morrow.

We gaze upon the distant mountain; its robe of azure, its lights and shades, so softly blended, make us imagine within its precincts the retreats and cool of Eden. Perhaps we attempt to gratify our longings. As we approach the mountain throws off its azure robe; its lights and shades shrink into rugged hills and vales—all dies away into cold reality. Thus it is with the natural landscape: it is the same with the moral.

The poor are sick of their thatched roof and hum-

ble fare. They look upon the man of wealth as filled with pleasure and delight.

The rich are tired with the cares and vexations of the world. They look upon the neat cottage as the abode of peace and contentment. A kind of distance, in either case, leads its charms and fascinations, covering the whole with the hue of enchantment. 'Thus are we ever in the chase for happiness; for happiness is the goal of our ambition; yet the splendid bauble is for ever eluding our grasp.

"Like the idiot gazing on the brook,
We leap at stars and fasten in the mud."

The seeds of ambition are sown in our very childhood. We all even then have some little pride to gratify—all have our dreams of greatness. As we grow, our ambition grows, and it "strengthens with our strength." Though its object may be different with different individuals, still it is everywhere essentially the same. The sigh of the villager for a petty magistracy is the same in its nature as that of a Cæsar for the glory of an Alexander, or of a Themistocles for the renown of a Miltiades. As we arrive at manhood, we launch our frail barks upon the tempestuous sea of life, each striving for that "tide in the affairs of men, which taken at the flood leads on to fortune." Then commences the contest: it is a contest for glory—for happiness.

The warrior gazes through the vista of many battles, and beholds a diadem and happiness, and renown. He rushes forth to the crimson field of war. The warm blood of millions flows. Mothers and maidens weep seas of sorrow. The earth is clothed in mourning. The harp of nations is hung upon the willows. The cypress is everywhere planted. The heavens become one vast gallery of woe. Laurels are heaped upon the hero's brow, but what is the grand result?

It has been said that Wellington is no sentimentalist, yet he, as he galloped his horse along the bloody plains of Waterloo, paused and exclaimed: "What is worse than a battle won, save a battle lost!"

Napoleon was often seen in tears, though in the midst of victory.

The great Saladin, too, convinced of the vanity of all ill-directed ambition, as he felt the chill of death, sent forth his herald with a shroud—the only remnant of its greatness.

Yet, notwithstanding all this; notwithstanding ambition seems doomed to suffer in exile; notwithstanding pillars and temples outlive the names of those who rear them, and not a pinch of dust remains of Cheops, what will not man perform to fill a few sheets of uncertain paper. Man still wishes to be Cæsar, though a voice comes from each of Cæsar's wounds. Ambition still cries: "I will ascend into heaven, I will exalt my throne above the stars of God; I will ascend above the heights of the clouds; I will be like the Most High." Much more, then, will it still plant its iron hoof upon the neck of nations. Much more, will it still teach the earth to mimic the storms of heaven; picture the cloudy tempest in the flight of armies; and with the deep tones of the gun, and the flames

of cities, mock the thunder and the lightning of the skies.

But the gleam of steel, the cannon, the stained scarf, and the reeling empire, do not compose all of the ashy fruit of ambition. It seems to cast an iceberg on all that is lovely in man. A cold winter frowns upon the summer of the human heart, and the social and domestic affections wither and die. Ambition is selfish; like the wave of death, it seeks the overwhelming of all.

'Thus, is a man ambitious—and does a father, or mother, or brother, or sister, or friend, yea, or even a wife stand between him and the object of his ambition—the very nature of him who before was lovely, undergoes a change. The amiable Josephine must be made to weep and drop the tear unregarded. "Two roses" must be steeped in the same unholy die. Even the hired assassin must despatch a mother, and to destroy a sister or brother, fields must be steeped in blood. 'The haunts of Eden become a howling wilderness. 'This alone stamps ambition as unhallowed. It is unhallowed. Says Dwight, "It knows no other path to thrones but that of blood."

If ever the ambitious man seems lovely, we must suppose him in the flight for literary fame.

Nothing unhallowed may appear, either in the imperishable song of the immortal bard—his playful sports with the "hoary locks" of ocean, or his "sportive twists of the lightning's fiery wing." All the deformity of ambition may be eclipsed by the splendor of its acquirements, or the magnificence of its art. It may indeed wear as much the aspect of virtue as the adroit rogue does that of an honest man. But the living acting spirit is not more different in the one than in the other.

But we will imagine him to be ambitious. Let us follow him in his retirement. Mark his furrowed brow; the cloud of anxiety which perpetually envelopes him. "'Tis sweet," cries he, "to win laurels of blood or ink." But his mind seems one continued tempest:—"the home of his spirit is in the bosom of the storm." Again, he cries, "We can not fly the demon thought!" He is evidently unhappy

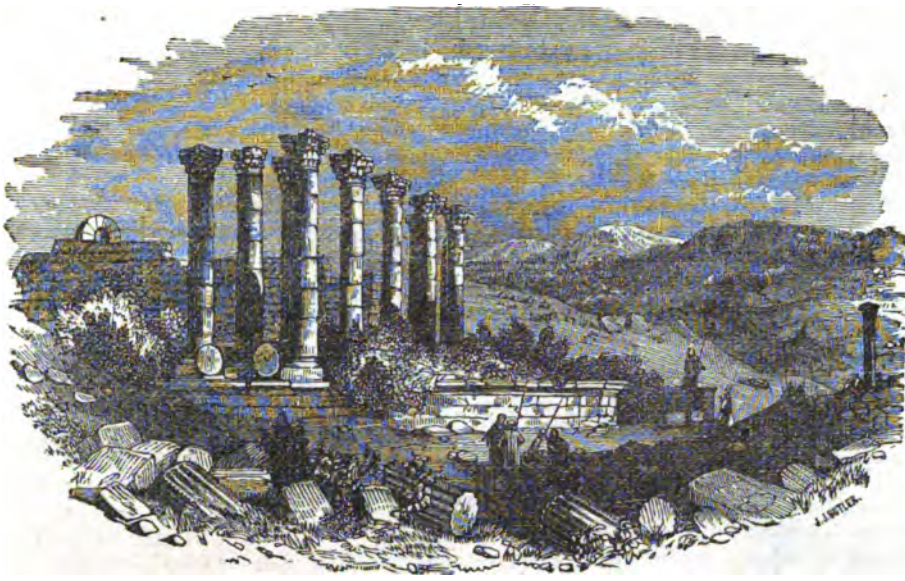
"Who grasps at earthly fame,
Grasps wind; nay worse, a serpent grasps, that through
His hand glides smoothly, and is gone; but leaves
A sting behind, which brings him endless pain."

But if ambition be evil and only evil, if it be neither the root nor the offspring of virtue, what shall arouse a man from his dormancy, and inspire him with zeal and enterprise?

We need not the deceitful wooings of ambition to prompt us to light the midnight taper, and move us to ascend the mount of distinction.

There are other spirits which lead forth their numerous trains of statesmen and orators, of heroes and poets, to usefulness and to glory. Self-respect will do it, or benevolence will do it, or a thirst for knowledge will do it, or patriotism will do it.

Nothing like ambition appears in Washington, or Howard, or Wilberforce, or Pollok, or a long train of others, who have ascended a greater height of usefulness and honor, than ever ambition carried a man
O si sic omnes!



Ruins of Persepolis.

THE RUINS OF ANCIENT CITIES.—No I.

Man is ever an imitative creature. All his powers, both mental and physical, constitute him such, and prompt him to the exercise of his imitative faculty; and, wherever its direct influence may not be apparent on the first glance, a little examination will enable us to discover it. There is such a universality of likeness among mankind in the broader developments of character, that we can not be wrong in thus considering all comprised within one general description, however much they may disagree in minor points. Whether we look upon his dwelling-place, or its embellishments, or any or the appendages by which he is surrounded; indeed, wherever material likeness can be produced, we invariably find figures in nature adopted as the ground work of their forms. Limited by no bounds which spirit can explore, the daringness of his genius has led him to throw off the trammels of earth, to overpass the circumscription of space, and render the beings of a lofty imagination subservient to his will. To represent them indeed by actual figure was an impossibility which even he could not overcome; to depict them in language glowing as his own thought, and fresh as the images he conceived, was a power which he has employed, and thus given wonders to the world for the intellect to revel in. But the use of material means was almost fully within his command; and how ably he has evidenced, is shown in the records of his genius scattered through every region of the earth. Few things are more striking to the imagination, and few calculated to convey instruction more effectively, than the remains of empires, the glory of which has departed, and the power of which has long been abolished. There is something deep and mysterious in the relics of a people with whom we become acquainted only in the silence of their desolation; there is something appalling in the sight of the ruins of a city which once was the seat of power and glory, and now is a mere heap of stones and bricks.

It is in its influence on the spirit, when we stand the lonely spectators of the ruins of ancient cities; it may be whose potentates swayed sceptres, at the wave of which myriads would bow.

The advance of science has taught us to read in the several layers of the earth's crust, and the contents they enclose, for the history of its past progress; and the labors of acute ability, assiduously occupied, have developed almost to certain demonstration the several links by which its many ages have been marked. Candid observation, and free and independent thought, conveyed in the guise of a rational but reverential disquisition, have dispelled the misty and superstitious prejudices which tended so much to impede the course and deteriorate from the utility of scientific research. Philosophers, when they read of the wonders of geology, are not now afraid of discovering themselves to be infidels, simply because they entertain notions of the stages of the great work of creation different from those by which their minds were originally prepossessed. The happily antiquated suspicion, that an increasing intimacy with the phenomena of nature and physical objects might one day prove truth to be at variance with scriptural Revelation is fast yielding to the conviction, even in the minds of the most ignorant and obtuse, that the more Scripture is illustrated by the corresponding commentary of the outward world, the more will its validity be established.

So in the present day, has the advancement of our geographical information not only added new sources of intellectual delight, furnished a fresh abundance of evidence to the historian, and new grounds of argument to the philosopher, but has afforded subject-matter of pleasing and instructive thought to all who have the taste to feel the beauty and sublimity which they so profusely exhibit, and the mind necessary to appreciate their importance. It is astonishing how perfectly the remains of past ages prove the truth of the prophecies of the Bible.

salinity of character which God has impressed upon the soul of man. Wherever there has been a seat of extensive power, there we invariably find a similarity of extent in the products of the people; and in some we find the more perfect exhibition of one trait of mind, and in some of another; yet for *grade of spirit* there seems to be no difference. Nor is there any region on the wide world's surface which appears to be without these traces of times bygone, in which the giants of intellect walked the earth. The savage wildernesses of what we deemed untrodden America, the sandy deserts of Syria, and the wild inlands of Africa, all attest powers of soul in their architectural remains unequalled since the days when their lofty and majestic constructions were erected, until perhaps the present time.

In some the grand, in some the sublime prevails, in others the varied and the beautiful are most apparent. But whatever be their peculiar characters, every place appears to have that as its treasure-house of thought, and magazine of interest, which is most appropriately adapted to the spot in which it is placed. Over many now the rank grass waves, and in others but little is left to indicate the nature of the place which once filled the then present scene; but, with all, sufficient is left either in romance or traditionary record to indicate its peculiarity.

The reflection is melancholy for man, proud man, the aspiring lord of the creation, to consider, that all his noblest works, his boasted productions of art, and vaunted displays of strength and knowledge, must inevitably share the doom of so many of their predecessors. Fate rolls on undisturbed, impenetrable, amid either the panoply of regal pomp or the humbler display of domestic life; unshaken, impitiable. Change is the great lord of the universe, and time is the agent which brings all things under his dominion.

We cast our eyes around and see the wrecks of past ages, the fragments of the finest monuments of mind and genius, lying prostrate, and in ruins. We look on the map in vain for the sites of cities, and the bounds of kingdoms that once flourished like the palm-tree, for giant-handed time, like the destroying angel, has passed over, and blotted them from his present scroll of history. Man's noblest labors, on which Babylonian calculation has run out its sands, have vanished, and now only "can adorn a tale." We look back with admiring awe and astonishment at the colossal architecture of former days. We view with reverence the mighty achievements of our great progenitors, and the wondrous perfection to which they carried the refinements of art through that mighty and ever-working engine, mind. We trace its rise, fall, decay. We linger for a time to take a last glimpse of the myriad-acted deeds of man, and then come to the humiliating conclusion, that all his best, his noblest works are but vanity; that all his labors, like himself, are mortal and perishable; that all around is subject to decay, for only One can brave the eternity of ages, and look serene on the ever-varying mutations of nature.

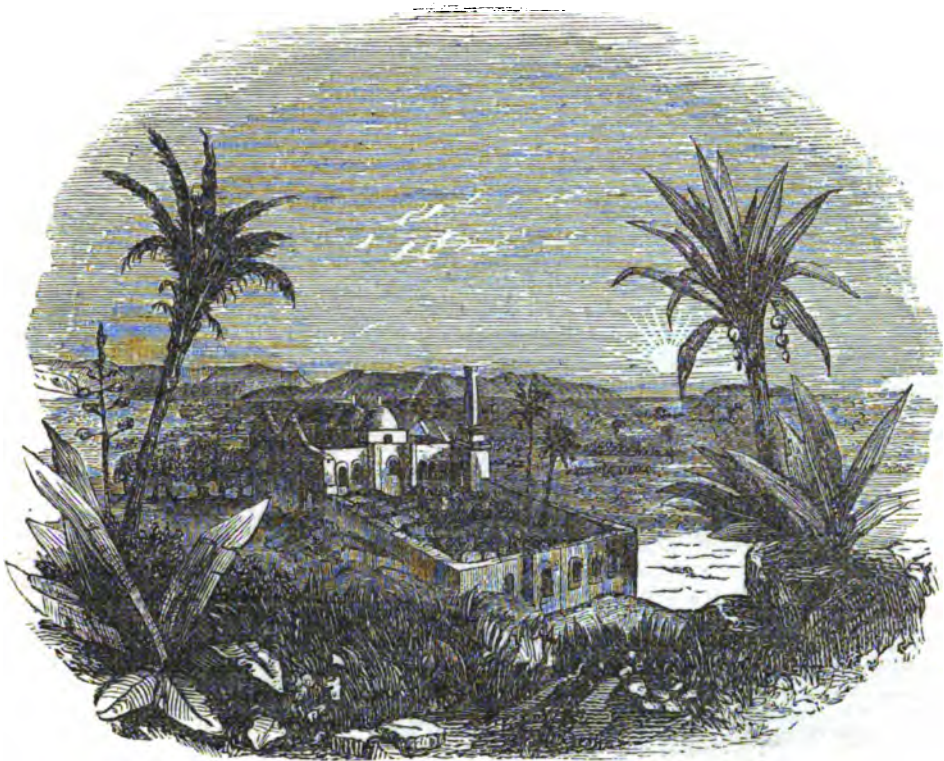
Let us pause awhile, and gaze on the map of nations before us. Where has gone the mighty work-

ings of Confucius, whose wise laws and maxims, his code of government and jurisprudence, made China what it was in the ancient world, a seat of refinement civilization, and the arts. It was here that science reared its head—fostered by the patronizing hand of peace, it attained the highest limits; and modern times look back with admiration on the efforts of the oriental world. What has been the fate of Hindoo and Braninical learning? Western lands have yet to laud your skill, for from you we have derived the essential parts and component principles of a science that has received the encomiums of all; and which from its vast importance has secured for itself the title of the "Great Art." But what has become of the stately native temples, sacred fanes and sepulchres? we see only splendid wrecks that faintly indicate their pristine grandeur. Where, we may ask, is the proud Nineveh, the golden Babylon? those magnificent and populous cities, ornaments of the earth, on which man had lavished all the cunning of art and device. Barely a stone in the desert points out their fate! Nineveh is indeed "a desolation, and like a dry wilderness; flocks lie in the midst of her, all the beasts of the nations." Where are the wondrous walls and hanging gardens of ancient Babylon, its temple of Belus, its artificial lakes and canals? Truly indeed is the prediction verified, that "Babylon, the glory of kingdoms, the beauty of Chaldea, shall never be inhabited, nor shall it be dwelt in from generation to generation." Its site has neither name nor remnant. Major Rennel supposes it to have been at Hellah, on the Euphrates, in which conjecture he is strongly corroborated by the late researches of Mr. Rich.

Palmyra, once rising like a refreshing fountain in the midst of the arid desert, the pride of Solomon, consists now of a few miserable huts of Arabs, scattered amid the courts of its stately temples and poricoes, exhibiting an humiliating contrast to its ancient magnificence. Throughout the plain that loses itself in the interminable horizon, the eye views antique monuments, pillars, palaces, and sepulchres; splendid even in their fall!—figured capitals, entablatures, and pilasters, all of Parian whiteness and exquisite workmanship, strew the ground.

Balbec is only a receptacle for shepherds, while every column of marble tells a mournful history. A traveller describes it as "a series of chapels, decorated with niches, admirably sculptured friezes, cornices and vaulted arches, all displaying the most finished workmanship, but evidently belonging to a degenerate period of art. But this impression can only be felt by those whose eyes have been previously exercised by the contemplation of the pure monuments of Athens and Rome; every other eye would be fascinated by the splendor of the forms and finish of the ornaments. The only fault is too much richness; the stone groans beneath the weight of its own luxuriance, and the walls are overspread with a lacework of marble."

Ephesus, illustrious city, adorned with temples, the wonder of the civilized world, is now the habitation of herdsmen. How mournfully true the prediction has been accomplished; the edifices, once the crowded scenes of diversions, are now obscured



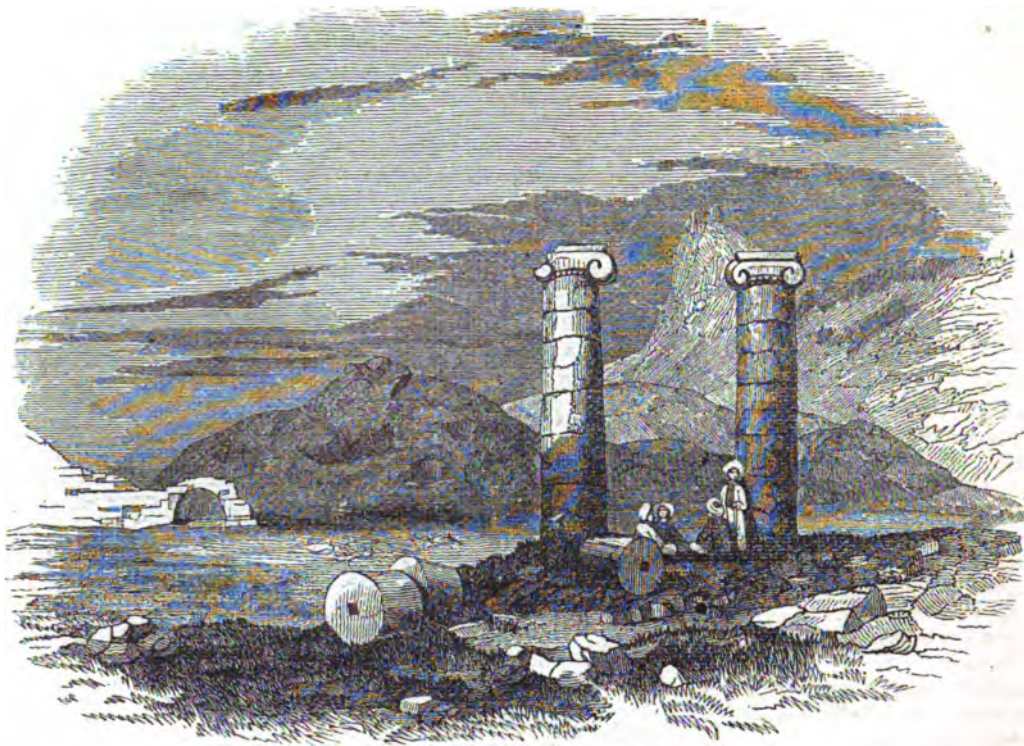
View of Ephesus.

with ruins, and overgrown. "The glorious pomp of its heathen worship is no longer remembered; and Christianity, which was here nursed by apostles, and fostered by general councils until it increased to fulness of stature, barely lingers on in an existence hardly visible." The other towns, to whose churches admonitory epistles were written, except Smyrna, present similar chaotic ruins; they are the habitations of shepherds, who find a shelter from the inclement storm beneath the masses of crumbling ruins.

Thebes, with its hundred gates, mementoes of human frailty, appears in its wreck to have been a city of giants, and its ruins a test of their former existence; it is now a miserable village. Persepolis, once the capital of the Persian empire, affords innumerable nests and dens for birds and reptiles: it is supposed to have stood thirty miles from the town of Shiras. Ecbatana, the seat of the ancient Magi, the residence of the fire-worshipping Parsees, lies in ruins, with its seven-fold walls. Memphis, supposed to be near the pyramids, on the hill, has perished even to its very ruins: no three travellers agree as to the plain on which it stood. Heliopolis, or the city of the Sun, has shared an almost similar doom. Of ill-fated Carthage, that for so many years divided empire with Rome, scarce a trace remains. Sir George Temple thus graphically describes it: "Early on the following morning I walked to the site of the great Carthage—of that town, at the sound of whose name mighty Rome herself had so often trembled; of Carthage, the mistress of powerful

and brave armies, of numerous fleets, and of the world's commerce; and to whom Africa, Spain, Sardinia, Corsica, Sicily, and Italy herself, bowed in submission as to their sovereign. I was prepared to see but few vestiges of its former grandeur; it had so often suffered from the devastating effects of war, that I knew many could not exist; but my heart sunk within me, when ascending one of its hills (from whose summit the eye embraces a view of the whole surrounding country to the edge of the sea) I beheld nothing more than a few scattered and shapeless masses of masonry. Yes; all vestiges of the splendor and magnificence of the mighty city had indeed passed away, and its very name is now unknown to the present inhabitants."

Tyre, on the coast of Phenicia, a highly commercial city, whose merchants the prophet calls princes, and her traders the "honorable of the earth," assumed the title of "Queen of the Seas," and was the mart for the East and the West. Its inhabitants now are only a few poor creatures, subsisting chiefly by fishing, who seem to be preserved in this place by Divine Providence, as a visible argument how God has fulfilled his word concerning Tyre, "that it should be as the top of a rock, a place for fishers to dry their nets on." Sidon, the most ancient of maritime cities, "the artist of glass," is also in a state of decay; formerly of vast riches, the people, skilled in the ingenious arts and luxuriant in contrivance and invention, obtained an extraordinary reputation, and a considerable share of the commerce of the seas



Ruins of Sardis.

In adverting to these witnesses of feeble human duration, the names of many cities glide on the mind. Sardis is in dust. Urjeush, the mighty capital of Karasm, Damascus, Busiris, are all "shorn of their beams."

We will not now dilate on the ruins of Herculaneum and Pompeii, concealed so many years beneath their covering of lava. Strange event—the cities preserving the same form, the same appearance, after a lapse of eighteen hundred years, as when inhabited by the Romans. Jerusalem presents a melancholy and interesting theme. Her mighty temple, built by Solomon, was a noble and magnificent edifice, so constructed as to impress the spectators with admiration, and the worshippers with reverence. This was once the most celebrated city of the whole land of Israel; it was renowned among Christians and Jews, and was dignified by the title of the Holy City. But how are her fortunes fallen—how deplorable her present condition! We are tempted to extract from a recent traveller a striking picture: "No noise arises from her squares or streets; no roads lead to her gates from the east or from the west, from the north or from the south, except a few paths winding among the rocks, on which you meet half-naked Arabs, some camel-drivers from Damascus, or women from Bethlehem or Jericho, carrying on their heads a basket of raisins from Engeddi, or a cage of doves to be sold on the morrow, under the terebinths beyond the city gates. No one passed in or out; no mendicant ever was seated against her kerbstones; no sentinel showed himself at her threshold.

We saw indeed no living object, heard no living sound; we found the same void, the same silence, at the entrance of a city containing thirty thousand souls, during the twelve hours of the day, as we should have expected before the entombed gates of Pompeii or Herculaneum."

Rome, a comparatively modern city, abounds in splendid memorials of the past; triumphal arches, domes, and amphitheatres. Corinth and Sparta are mean towns, occupied by the hut of the goatherd; while Athens presents the appearance of a small modern town—Athens that sent forth the noblest historians, the most eloquent orators, the ablest statesmen, and the greatest military commanders! Ages and ages did Athens ride in the zenith of glory, till at length she became the prey of the spoiler, despot, and stranger; long she laid in the dust, grovelling and wretched—but *now*, having burst her thralldom, a brighter era begins to dawn; and future historians may perhaps record that Athens and Greece, so long blotted from the roll of nations, may rise from their ashes, like the fabled Phœnix of old, to liberty, honor, and glory.

THE COLOR OF THE OCEAN.

NAVIGATORS have observed with great attention the varying tints displayed by the ocean in different regions, and the circumstances which apparently influence those tints. The general tenor of the evi-

dence collected, after making allowance for local exceptions, is to the effect that the color of the ocean approaches more nearly to *blue* than to anything else. "To the question, what is the color of the sea?" says M. Arago, "the responses are very nearly identical. It is to an *ultramarine blue* that Mr. Scoresby compares the general tint of the Polar sea; it is to a perfectly transparent solution of the most beautiful *indigo*, or to *celestial blue*, that M. Costaz assimilates the color of the waters of the Mediterranean; it is by the words *bright azure* that Captain Tuckey characterizes the waves of the Atlantic in equinoctial regions; it is also *bright blue* that Sir Humphrey Davy assigns as the hue reflected by pure water procured by the melting of snows and ice. Celestial blue then, more or less deep, that is to say, mixed with smaller or greater quantities of white light, would appear to have been always the peculiar tint of the ocean."

Yet although there is not now much difference of opinion concerning the general color of the ocean, there are many exceptions to the general rule, some of which are capable of ready explanation, while others are still subject for conjecture. A few details will show the nature of these exceptions, and the localities where variously-colored sea-water has been found.

In 1816 Captain Tuckey, who, like the officers of the recent Niger expedition, made an unsuccessful attempt to penetrate into the pestilential regions of Africa, was sailing on the Atlantic toward the mouth of the river Congo, and observed a remarkable tint in the waters of the ocean. "After passing Cape Palmas," says he, "and entering the gulf of Guinea, the sea appeared of a whitish color, growing more so until making Prince's island, and its luminosity also increasing, so that at night the ship seemed to be sailing in a sea of milk." Captain Horsburg, in like manner, mentions a milk-white appearance of the sea, observed in a passage from China to Australia. Some seas present a reddish appearance, such as that which is known by the name of the Red sea; such as is sometimes exhibited by the sea on the coasts of Brazil and of China; and such as has given the name of the Vermilion sea to a part of the ocean near California. Captain Tuckey also found the water in Loango bay to present a deep red tinge, as if mixed with blood. The upper part of the Mediterranean sometimes assumes a purple tinge. Captain Cook, and some of the arctic navigators, describe a brown color of the sea. In the Indian ocean, around the Maldivé islands, the sea presents a black appearance, which appearance is also supposed to have given rise to the name of the Black sea. The Yellow sea, on the coast of China, similarly indicates the source whence its name was derived.

All the above tints are of an unusual kind, but the intermediate changes or degrees between blue and green are much more common, and have been noticed by Mr. Scoresby with great attention. He says that in the Greenland sea, which occupies all the portion of the Atlantic northward of the Shetland islands, the color varies from ultramarine blue to olive green, and

from the most pure transparency to great opacity; and he also observes that these appearances are not transitory, but permanent, not depending on the state of the weather, but on the quality of the water. The green-colored water he estimates to occupy one fourth of the surface of that sea, occupying generally its northern part. It is liable to alteration in its position, from the action of the polar current; but still it is always renewed, near certain situations, from year to year. It often constitutes long bands or streams, lying north and south, or northeast and southwest; these are sometimes more than a hundred miles in length, and thirty or forty in width. These stripes of green water occur principally near the meridian of London, in high northern latitudes. In 1817 Mr. Scoresby found the sea to be of a dark grass-green tint in the meridian just mentioned, but of a transparent blue eastward of thence. In some parts of this sea the transition between the green and blue water is progressive, passing through the intermediate shades in the space of three or four leagues; at others, it is so sudden that the line of separation is seen like the rippling of a current; and the two qualities of the water keep apparently as distinct as the waters of a large muddy river on entering the sea. On one occasion Mr. Scoresby fell in with such narrow stripes of various colored water, that he passed streams of pale green, olive green, and transparent blue in the course of ten minutes' sailing.

The mode in which all these varying tints of color are principally accounted for is by attributing them to the presence in the water of minute living animals. The phosphorescence or luminosity which the sea sometimes presents, especially in a dark night, is due to myriads of minute marine animals which exist in the water at certain times and places; and it is believed that an extension of the same mode of explanation will avail in accounting for the above-named colors of the sea. Captain Cook found that the brown color of certain seas was due to a dense assemblage of minute mollusca and crustacea. Captain Horsburg detected, in the white-looking water of the Eastern seas, minute globular bodies linked together, and doubtless forming some species of *beroe* or *medusa*. At certain seasons of the year, myriads of red mollusca float in the seas off the coasts of Brazil and China, and give rise, in all probability, to the tint of those waters. A similar remark has been made respecting the waters of the Red sea. Captain Tuckey, in order to discover the cause of the white appearance of the sea in the gulf of Guinea, caused a bag, made of cloth and kept open by a hoop, to be lowered into the water, by which means he captured vast numbers of small marine animals, to which were attached myriads of exceedingly minute crustacea, the apparent source of the white appearance of the water. Mr. Scoresby was led to detect the cause of the green color in some parts of the Arctic sea, by a curious circumstance, which was of great value to him as an adventurer in the whale fishery. He found that the food of the whale occurs chiefly in the green-colored water, which therefore affords whales in greater numbers than the blue portions of the sea, and is constantly sought after by the whalers.

When he examined with great care some portions of water taken from different parts of the sea, he found that the green water contained immense numbers of medusæ, from which the blue water was almost free, and the number increased as the depth of green tint increased. He also traced to this cause the great difference in transparency of the two kinds of water, the green becoming very opaque, from the great number of marine animals which it contains, whereas the blue is so transparent that Captain Wood is said to have seen the sandy bottom, and shells strewed over it, at a depth of eighty fathoms, near Nova Zembla.

But it is found that this explanation, though generally satisfactory, is not always sufficient to account for the color presented by the ocean. In some cases no living animals, capable of producing the effect, can be found in the water. Mr. Scoresby is doubtless correct when he states that "where the depth is not considerable, the color of the water is affected by the quality of the bottom. Thus, fine white sand, in very shallow water, affords a greenish-gray or apple-green color, becoming of a deeper shade as the depth increases, or as the degree of light decreases; yellow sand, in soundings, produces a dark green color in the water; dark sand, a blackish green; rocks, a blackish or a brownish color; and loose sand or mud, in a tideway, a grayish color." Captain Tuckey, who expected to find red animalculæ in the water of Loango bay, found it quite free from such coloring agents, but discovered that the bottom consisted of soft mud composed of a reddish clay, without the smallest admixture of sand, and so smooth that it might be laid on in the manner of paint. It is found that at the mouths of large rivers, where a great body of water is discharged into the ocean, the prevailing color is brownish; this appears to be caused by the impalpable mud which is brought down by the river, and which is held in suspension by the water, to a considerable distance from land.

Besides the presence of animal and vegetable substances in the water, and the effect of the bottom of the sea in imparting a tint to it, a considerable portion of the change of color appears to be due to reflection from the sky and clouds. On this point Professor Jameson observes: "An apparently dark-colored sea is a common prognostic of an approaching storm; not that the water is really blacker than usual, but because the dark color of the clouds indistinctly seen in or reflected from the waves is mistaken for the color of the sea itself. Whatever other color the sky happens to wear has a greater or less influence on the appearance of the ocean; thus, red clouds seem to tinge it red, &c. On some occasions the edges of the waves, by refracting the solar beams like a prism, exhibit all the brilliant colors of the rainbow, which is still more nearly imitated by the refraction of the rays in the spray. Not unfrequently an indistinct image of the neighboring coast, reflected from the ruffled surface, is mistaken for the color of the water."

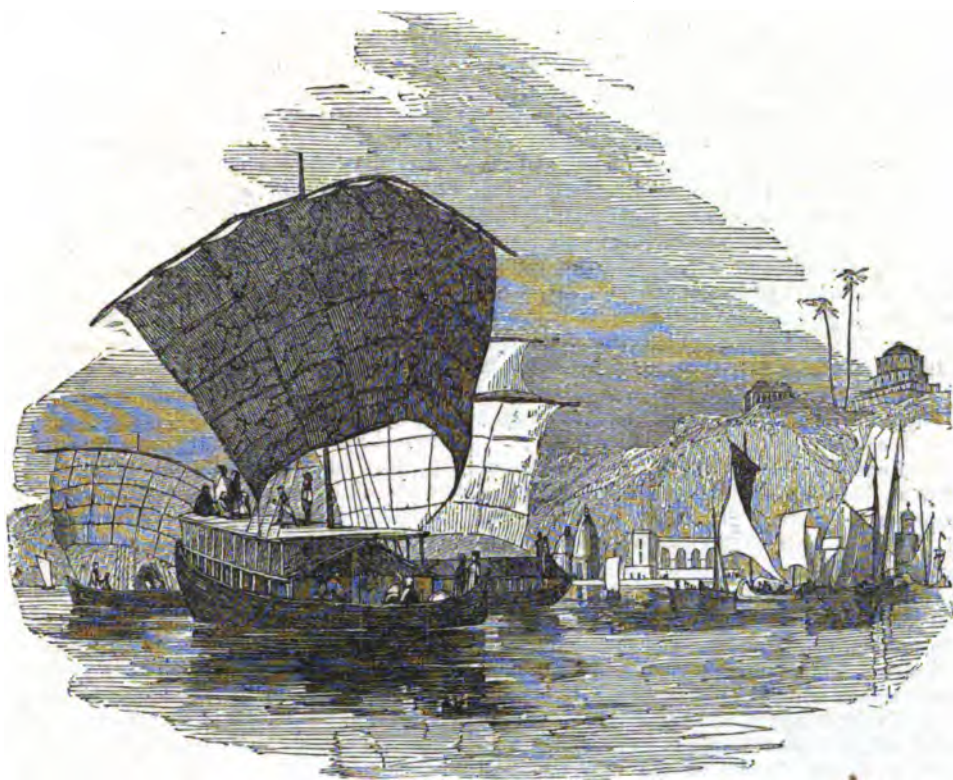
By one or other of these modes, then, is the deviation from a blue tint in any part of the ocean traced to its source. Blue is now regarded as the natural

tint, so to speak, reflected from the bosom of the waters. It is found, however, that the blue is more intense in the waters of the tropical regions than in latitudes approaching more nearly to the poles. A curious example of this is furnished by the gulf stream, a modification of the equatorial current; this current sweeps across the Atlantic from southeast to northwest, passes round the gulf of Mexico (which gives it a distinctive name), and then again traverses the Atlantic. During this retrograde course it is seen to be more intensely blue than the ocean through which it flows. Humboldt, when in South America, forty years ago, adopted a curious mode of comparing the depth of tint in different waters. This was by using an instrument called a *cyanometer* (from two Greek words implying a "measurer of blueness,") previously used by Saussure in determining the depth of tints in an Alpine sky. The cyanometer consisted of a zone or belt of pasteboard, divided into fifty-one parts, and colored with as many different shades of blue, ranging from a depth of blueness scarcely to be distinguished from black, to a bluish white, and proceeding by regular gradations. Each shade had a particular number attached to it; and the observation consisted in determining which number in the instrument corresponded with the tint of the water (or of the sky) at any given time and place. Humboldt found that when he regarded the waters of the vast Pacific in fine calm weather, the blue of the water was much more intense than that of the sky, the cyanometric number in the former frequently reaching forty or forty-two, while that of the latter was at fourteen or fifteen.

DARK DAYS.—On the 19th of May, 1780, an uncommon darkness took place all over New England, and extended to Canada. It continued about 14 hours, or from ten o'clock in the morning till midnight. The darkness was so great that people were unable to read common print, or tell the time of the day by their watches, or to dine, or transact their ordinary business without the light of candles. They became dull and gloomy, and some were excessively frightened. The fowls retired to their roosts: Objects could not be distinguished but at a very little distance, and everything bore the appearance of gloom and night.

Similar days have occasionally been known, though inferior in the degree or extent of their darkness. Among the most remarkable of these in the northern states, were Oct. 21st, 1710; Aug. 9th, 1732; Oct. 9th, 1762. The causes of these phenomena are unknown. They certainly were not the result of eclipses. Many have supposed them to be produced by layers of vapors, some ascending and others descending, so as to intercept the rays of the sun in their passage to the earth.

The winter before the great day above mentioned, was the severest winter ever known in New England. Snow lay about four feet deep nearly the whole time, from the middle of November to the middle of April.



Boats on the Ganges.

THE GANGES.

THE Ganges flows through some of the richest portions of the earth, embellished by the fertility and splendor of an exuberant vegetation, and peopled by sixty millions of the human race. Descending from the Himalaya mountains, where it has its source, it soon reaches the plains, and after receiving many tributaries, it empties its waters into the ocean by several mouths, completing a course of above fifteen hundred miles.

The country through which the Ganges flows is divided into three natural districts: 1. The great plain of Bengal, which we shall first describe, extending from south to north two hundred and eighty miles by one hundred and eighty wide, and comprising four marked tracts of country, commencing with the Sunderbunds, a district between the mouths of the Ganges and the Brahmapootra. This is the most unhealthy part of India, and its appearance is thus described by Bishop Heber: "Nothing met the eye but a dismal and unbroken line of thick black wood and thick-
et, apparently impenetrable and interminable, which one might easily imagine to be the habitation of everything monstrous, disgusting and dangerous, from the tiger and the cobra de capello, down to the scorpion and moscheto—from the thunder-storm to the fever." The Sunderbunds are swampy all the year round, entirely uncultivated, and inhabited only by a miserable population employed in cutting timber. The

next part is "the country subject to inundation," lying between the Ganges and its branches, and also between that river and the Brahmapootra, as far as 25° north latitude. At the junction of the two rivers an immense tract of country is overflowed to the depth of many feet, and the towns and villages are built on artificial mounds. The depth of alluvial earth is often one hundred and thirty feet, and wells can not be sunk. As soon as the waters subside, rice is sown, and this district could supply the whole of Bengal with that staple article of food. In these alluvial tracts the rivers easily change their course, and there are old beds of the Ganges at a distance of several miles from the present channel. The third district, which is partly situated west of the Hooghly, and partly north of the twenty-fifth degree of north latitude is not subject to inundation, except near the rivers in the northern part: but the soil abounds with springs, and irrigation is extensively practised. The country is luxuriantly productive in cotton, indigo, sugar, and grain; and the silk-worm is cultivated. Toward the northern extremity of this tract there are large portions of waste land. The fourth district, situated between the plain of the Ganges and the lower region of the Himalaya mountains, is called the Tarai, or "the swamp," and in the province of Bengal has a width of from twenty to twenty-five miles, but narrows to the width of a few miles toward its northwestern extremity. The soil is a rich alluvium, and the waters which flow from the higher regions

form a swamp in consequence of the slope being insufficient to drain them off. The vegetation is exceedingly rich and profuse; but the heat, acting upon so moist a surface, engenders disease, and the only inhabitants, except elephants, rhinoceroses, tigers, buffaloes, and other wild animals, are a few woodcutters.

The second great district drained by the Ganges is divided from Bengal by the river Coosy, and the Rajmahal hills, and extends westward to the junction of the Jumna with the Ganges, comprising the plain of Bahar; and here the moist alluvium of Bengal is exchanged for a sandy soil. No part is inundated, but the soil is rendered highly productive by irrigation, and resembles a garden, bearing luxuriant crops of opium, indigo, rice, and cotton. That part of the district north of the Ganges, though very fertile, is swampy in some places, and cultivation is less advanced. There are numerous lakes, and the earths abound with saltpetre.

The third and last district extends from southeast to northwest, between the Ganges and the Jumna, and comprises the plain of the Doab, Oude, and Rohilcund. The soil is dry, the climate temperate, and the palm-tree disappears. Wheat, barley, and other similar crops are cultivated, and the fruits of Europe arrive at perfection, while the heat of summer is favorable to rice, cotton, indigo, and the productions of the tropics. Thus the great river and its tributaries water regions whose productions are diversified by climate and other causes, and hence it becomes the medium by which a great traffic is facilitated. The Ganges is navigable throughout the year for small boats to the foot of the Himalayas, and for six months for boats of a larger size. Major Rennel stated that the number of boats employed on the Ganges was thirty thousand, and the traffic is now much more active than in his time. They are generally crazy and ill-appointed vessels. The Bengalee and Chittagong vessels have high heads, with large clumsy rudders suspended by ropes, and worked by helmsmen raised at a great height above the vessel. The European mode of rigging brigs and sloops is coming slowly into use. The "panchway," or passage-boat is a large and broad vessel "shaped like a snuffer-tray," with a deck fore and aft, the middle having a roof of palm-branches, over which is thrown a coarse cloth. The master steers with a long oar, and another man stands in the fore part with a long oar, which he uses for sounding as well as in navigating the boat, and six cross-legged rowers impel her onward with short paddles, which are employed, however, in the same way as oars: a rude sail is hoisted when the wind is favorable. Bishop Heber describes a Bengalee boat as "the simplest and rudest of all possible structures. It is," he says, "decked over throughout its whole length, with bamboo, and on this is erected a low light fabric of bamboo and straw, exactly like a small cottage without a chimney: this is the cabin, baggage-room, &c.; here the passengers sit and sleep; and here, if it be intended for a cooking-boat, are one or two such ranges of brick-work like English hot-hearths, but not rising more than a few inches above the deck, with small, round, sugar-loaf holes, like those in a lime-kiln, adapted for dressing victuals

with charcoal. As the roof of this apartment is by far too fragile for men to stand or sit on, and as the apartment itself takes up nearly two-thirds of the vessel, upright bamboos are fixed by its side, which support a kind of grating of the same material immediately above the roof, on which, at the height probably of six or eight feet above the surface of the water, the boatmen sit or stand to work the vessel. They have for oars long bamboos with circular boards at the end, a longer one of the same sort to steer with, a long rough bamboo for a mast, and one or sometimes two sails of a square form (or rather broader above than below), of a very coarse and flimsy canvass. Nothing can seem more clumsy or dangerous than these boats. Dangerous I believe they are, but with a fair wind they sail over the water merrily." The "budgerow," a corruption from the English word barge, though a clumsy, is far from being an inelegant looking object on the water. It is used as a passage-boat, and is generally accompanied by a luggage-boat, in which the cooking is carried on; and a small "dinghee" is useful to keep up a communication between the two boats in case one of them becomes fixed on a shoal. The "pulwars" are a class of boats used for the conveyance of goods, and are both clumsily built and ill-managed so that it is often difficult to avoid being run foul of. In a long reach of the river, the large pulwars, with sails gliding past in all directions, reminded Bishop Heber of the Manks jagger-boats at the mouth of the Mersey. The floating shops are curious and characteristic. The nautical tradesman sets out when the state of the river is most favorable, after the rains, and proceeds to Agra, Meerut, or Lucknow, by their respective rivers, ascending as far upward as his boat can carry him, and furnishing glass, cutlery, perfumery, and a great variety of articles to the people of the upper provinces. The Ganges owes a great deal of its animation and interest to the innumerable boats which glide on its bosom. At every point of land may be seen what Heber terms "a coppice of masts," waiting for a wind, while other vessels, with their masts down, drift with the stream. In one part of his voyage he speaks of the number of fishing boats as "really extraordinary," most of them carrying a small sail spread between two bamboos, one on each gunwale; and sometimes two of the crew might be seen, each holding a garment extended by the feet and hands to catch the favoring breeze.

The views on the banks are not less interesting or lively than those on the river. Even the tediousness of tracking or hauling is compensated by the beauty of inland objects. The river itself, glistening in the sun, with its moving scenery of boats and vessels, is often several miles wide, and at the period of the inundations the voyager sails over the inundated country amidst villages raised slightly above the water. In tracking, the boat is often not more than two or three yards from the shore; and the late Miss Roberts, in her "Scenes and Characteristics of Hindostan," thus describes the moving panorama which then passes before the voyager: "The smallest villages on the banks of the Ganges possess landing-places, which we vainly seek in the richest and most popu-

lous parts of Europe. From an ample terrace, at the summit of the bank, broad steps descend into the river, enclosed on either side by handsome balustrades. These are not unfrequently flanked with beautiful temples, mosques, or pagodas, according to the creed of the founders; or the ghaut is approached through a cloistered quadrangle, having the religious edifice in the centre. The banyan and the peepul fling their sacred branches over the richly-carved minarets and pointed domes, and those in the Brahminee villages are crowded with troops of monkeys, whose grotesque and diverting antics contrast strangely with the devotional attitudes of the holy multitudes performing their orisons in the stream. Nothing can be more animated than an Indian ghaut: at scarcely any period of the day is it destitute of groups of bathers, while graceful female forms are continually passing and repassing, loaded with water-pots, which are balanced with the nicest precision on their head. The ghaut, with its cheerful assemblage, disappears, and is succeeded by some lofty overhanging cliff wooded to the top, and crowned with one of those beautiful specimen of oriental architecture scattered with rich profusion over the whole country. Green vistas next are seen, giving glimpses of rustic villages in the distance, and winding alleys of so quiet a character, that the passer-by may fancy that these sequestered lanes lead to the cottage-homes of his own happy land—a brief illusion, speedily dissipated by the appearance of some immense herd of buffaloes. The savage herds are left behind, and the scene changes again, deep forests are passed, whose unfathomable recesses lie concealed in eternal shade; then cultivation returns; wide pastures are spread along the shore, covered with innumerable herds; the gigantic elephant is seen under a tree, fanning off flies with a branch of palm, or pacing along, bearing his master in a howdah through the indigo plantations. European dwellings arise in the midst of park-like scenery; and presently the wild barbaric pomp of a native city bursts upon the astonished eye." Heber also remarks that some of the villages on the banks of the river, surrounded "by natural meadows and hedge-rows, were so like English, that but for the cocoas we could have supposed ourselves at home." Some of the villages are as neat as any of those in Europe, shaded by banyans, palms, peepuls, tamarinds, and various flowering trees, and situated in the midst of fields of rice, cotton, sugar-canes, or indigo—the latter when cut, smelling like new-mown hay.

The navigation of the Ganges by the common river-boats is far from being sufficiently quick for commercial purposes. At the period of the inundation the navigation is most speedy, the wind generally blowing from a quarter which enables a vessel to stem the current by sails, while, if proceeding downward, the current bears her rapidly along. In the dry season their course down the stream does not exceed forty miles in twelve hours, but at other periods from fifty to seventy miles are performed in the same time. In ascending the stream the boats seldom advance more than twenty miles a-day, and when tracking is necessary, which is done by men and also by oxen, a much less distance is accomplished. In 1833, by the most

rapid mode of land travelling from Meerut to Calcutta the journey was performed in twelve days, a distance of eight hundred miles, but at an enormous cost, with great fatigue and discomfort. The quickest conveyance for a small package occupied five weeks. By water the voyage to Calcutta was about seven weeks, and from Calcutta the average time exceeded four months, and the transit of heavy goods often occupied six and seven months by the clumsy native craft. Meerut was in effect as far from Calcutta as the latter was from London, and the costs of freight and insurance were even higher. The voyage from Calcutta to Allahabad occupied between two and three months. In consequence of the obstacles to the upward navigation of the river, many articles were unattainable in the upper provinces, and the profitable interchange of commodities between the different provinces was interrupted and obstructed. These circumstances induced the late Lord William Bentinck to adopt measures for giving to the rivers of India the advantages of steam-navigation; and in 1832 four iron steamers of sixty tons each, drawing two feet water, were made in London, and in 1834 they were plying on the Ganges between Calcutta and Allahabad with the most signal success. In 1837 their number was increased, and there is every prospect of the internal navigation of the British possessions in India being carried on exclusively by steamboats, a result which will be of the greatest importance in a military and political as well as a commercial point of view. Ships on arriving in the Hooghly were generally two or three weeks in working up to Calcutta, and the unhealthy Sunderbunds became the grave of many a European. Now, the arrival of the ship is announced by telegraph, a steamer comes down from Calcutta, and she is quickly towed out of this region of death, and reaches Calcutta in two or three days, instead of as many weeks.

OF SPRINGS AND FOUNTAINS.

As there is no effect more visible, or more beautiful in nature, than the inexhaustible flux of fountains, and the course of rivers, which roll in pomp and majesty along their beds for ages without control; so there is no effect, the cause whereof nature seems to have concealed for our eyes with greater precaution. In what commodious places are those immense reservoirs lodged, which, from their secret and inexhaustible stores, supply us with such a profusion of water more than sufficient to answer all our purposes, and yet are kept under such due restrictions, as not to overflow, but to render the countries fruitful through which they pass?

Though the Almighty has been pleased to cast a veil over many things, yet, we are not to imagine, that he has for that reason forbid our inquiries after them; that veil is not always impenetrable; and as the handiworks of our great Creator are the just objects of our admiration, though we are perfect strangers to their first principles, and most secret causes, our wonder is still heightened and increased, in proportion

to the discovery which we make of the particular structure, contrivance, and grandeur of them. The better we are acquainted with a phenomenon that is for ever subsisting, the more sensible we are of the bountiful benefactions of our Creator, which are ever obvious to our eyes, the stronger will our motives be to pay him the tribute of gratitude.

Various have been the opinions of philosophers concerning springs, but those which deserve the most notice are the three following :

I. That the sea-water is conveyed through subterraneous ducts or canals, to the places where the springs flow out of the earth ; but as it is impossible that the waters should be thus conveyed to the tops of mountains, since it can not rise higher than the surface, some have had recourse to subterraneous heats, by which, being rarefied, it is supposed to ascend to vapors, through the interior parts of the mountains.

II. Others advance the capillary hypothesis, or suppose the water to rise from the depths of the sea through porous parts of the earth ; but they seem to lose sight of one principal property of this attraction ; for, though water rise to the top of the tube, it will rise no higher, because it is only by the attraction of the parts above that the fluid rises. Therefore, though the waters of the sea may be drawn into the substances of the earth by attraction, yet it can not be raised by this means into a cistern or cavity, so as to become the source of *springs* ; the

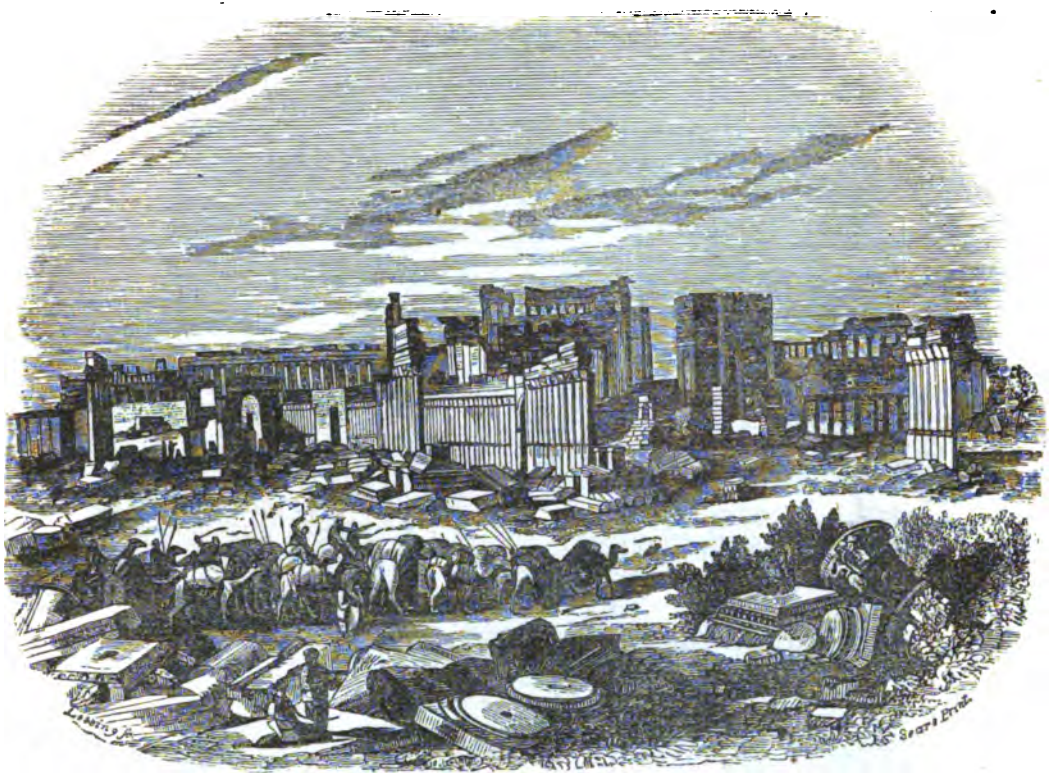
III. Hypothesis is that of Dr. Halley, who supposes the true source of springs to be melted *snow*, *rain-water*, *dew*, and vapors condensed. The Doctor found, that every ten square inches of the surface of the ocean, yield a cubic inch of water in vapor every day ; each square mile 6,914 tons ; and each square degree 33,000,000 of tons. Now, if we suppose the Mediterranean to be forty degrees long, and four broad, its surface will be one hundred and sixty square degrees, whence there will evaporate 5,280,000,000 of tons per day in the summer time. The manner in which these waters are collected, so as to form reservoirs for the different kinds of springs, seems to be thus :

The tops of mountains, in general, abound with cavities and subterranean caverns, formed by Nature to serve as reservoirs ; and their pointed summits, rising into the clouds, attract the vapors of the atmosphere, which are in consequence precipitated in water, and by their gravity easily penetrate through beds of sand and lighter earth, till they are stopped in their descent by more dense strata, or beds of clay, stone, &c., where they form a basin or cavern, and, working a passage horizontally, issue out at the sides of the mountains.

Springs, which flow perpetually, and without any perceptible diminution or increase of their water, are called *perennial springs* ; such as run only for a time, and at certain seasons of the year, are called *periodical springs*. The latter are very numerous in Switzerland, and are supposed to be produced by partial overflows of water from the caves, or natural cisterns in the interior of the mountains, which, when filled, throw off the superfluous water. Some

springs are called *intermitting*, because they flow and stop alternately. Several springs exist in Iceland, from which the water flows only in sudden gushes, a phenomenon probably caused by the action of subterraneous vapors. There are also *reciprocating springs*, whose waters rise and fall, or flow and ebb, at regular intervals. The spring of Fousanche, in Languedoc, flows every day for above seven hours, and then stops for nearly five hours, rising each day fifty minutes later than the preceding day. The Bullerborn, a fresh water spring in Westphalia, rises with a great noise. There is another at Colmars, in Provence, which stops every seven minutes. This spring was affected by the great earthquake which destroyed Lisbon, in 1755, and changed into a *perennial fountain* ; but, in 1763, it began again to stop at intervals. One of the most remarkable fountains of ancient times, was one of which Herodotus and Diodorus Siculus have transmitted an account. It was called the *Fountain of the Sun*, and was situated near the temple of Jupiter Ammon. At the dawn of day, this fountain was warm, as the day advanced it became progressively cool, and at noon it was at the extremity of cold ; at which time the Ammonites made use of it, to water their gardens and shrubberies. At the setting of the sun it became again warm, and continued to increase as the evening proceeded, until midnight, when it reached the extremity of heat ; as the morning advanced it grew again progressively cold. There was a fountain also equally curious in the forest of Dodona. It is said to have had the power of lighting a torch. At noon it was dry ; at midnight full ; from which time it decreased till the following noon. Cashmere is said to abound with fountains, which the natives call *miraculous*. Pliny the Younger, describes one near the Larian Lake, which increased and decreased three times every day. The ancients were never weary of attributing peculiar properties to fountains. That of Arethusa, was supposed to have the power of forming youth to beauty, and that of Calaphon, of enabling the priest of the Clarian Apollo to foretell future events.

Of medicinal and detrimental fountains, we have many instances vouched by writers, modern as well as ancient. Philostratus mentions one that caused the leprosy ; Vitruvius speaks of another, near Zama, in Numidia, that gave unusual loudness to the voice : we read of some that caused immediate death ; some, the loss of memory, and others, that restored it. Many of them have doubtless a fabulous origin ; yet it would be too presuming to doubt the absolute possibility of their existence. Pliny speaks of two fountains, one in Judea, the other in Æthiopia, which, being impregnated with sulphur, had the property of oil, with respect to burning. The same property is imputed to a river in Cilicia ; and a fountain near Carthage, by Vitruvius. Herodotus relates, that in the country of the Atlantes, in Africa, was a hill of salt, on the summit of which bubbled a spring of fresh water. At Guildford, in Connecticut, is a fountain, the water of which will evaporate, if corked in a bottle ever so securely. Some writers mention one rising in Mount Soracte, the waters of which boiled at the rising of the sun.



A general View of the Ruins of Palmyra.

PALMYRA.

PALMYRA was anciently one of the largest cities in the world, but no certain information can be afforded as to its origin. The general supposition is, that it was built by King Solomon, and called by him Tadmor—the name of Tadmor, or Palmyra, by its signification in the Syriac, as well as in the Latin language, denoting the number of palm-trees which afforded shade and verdure to that temperate region. It is regarded by some as having risen to distinction long before the time of this monarch, who lived about a thousand years before the Christian era. The testimony of Josephus, no incompetent authority, seems to favor the first opinion, who says, in regard to the conduct of so politic a prince as the king of Jerusalem building a city of such extent in a distant and uninhabited corner of his dominions; that the probable reason why Solomon built this city so remote from the parts of Syria that are inhabited is this, that below there is no water to be had, and that it is in that place only where there are springs and pits of water, and that it was meant to form the emporium of the commerce carried on between the Persian gulf and the mercantile cities on the banks of the Mediterranean.

The pearls, cinnamon, gold, &c., mentioned in sacred history, afford ample proof that a commercial relation did subsist from a very early period between the places in question, because in the countries bordering upon the Persian gulf could these articles

alone be got; and Palmyra, being situated in a straight line between the Persian gulf and the Syrian and Phœnician cities, thus early became the centre of the trade of the eastern world, and attained to that degree of wealth and splendor which its ruins so powerfully indicate.

The original buildings of Palmyra have been long entirely obliterated by the lapse of time, and the edifices, the ruins of which are now so splendid, must have been erected long posterior to the time of Solomon.

The history of this city is almost totally unknown, probably from its sequestered situation and peaceful pursuits, and the various other causes which also tended to sink in obscurity every record of the early commercial history of that interesting portion of the globe.

Meager, however, as the historical notices of Palmyra are, it can boast of one splendid era, when, under its king, the celebrated Oudenatus, it gained various victories over the Persians, and at length stood forth as the rival of Rome herself.

Zenobia, his queen, one of the most illustrious females that Asia ever produced, after his demise assumed the government, avenged his death, and soon rendered herself formidable to all the nations within her reach. But her dignity and power did not long continue, and Palmyra, through her, sacrificed ages of quiet and prosperity to a moment of glory. She was at length defeated by Aurelian, and in her fall fixed an indelible stain upon a character otherwise



A near View of a portion of the Ruins.

glorious, by purchasing her own life at the expense of her friends.

Among the numbers whom on this occasion Aurelian devoted to death, was the celebrated Longinus, secretary to the queen, and one of the most elegant writers in the Greek language whose works have come down to us. Genius and learning were incapable of moving an unlettered soldier, but they had served to elevate and harmonize the soul of Longinus. Without uttering a complaint, he calmly followed the executioner, pitying his unhappy mistress, and bestowing comfort on his afflicted friends. His fame perhaps will survive the queen who betrayed, or the tyrant who condemned him.

From this period the city gradually verged into decay and desolation, and its present mouldering remains speak to us in the most emphatic language of the unavoidable fate that awaits the pride of man and the noblest monuments of human genius.

The ruins are the most extraordinary and stupendous in the world, alike remarkable for extent and magnificence, and the romantic, wild, and desolate spot on which they are found. Architecture seems to have lavished all her ornaments, and displayed all her skill, in the construction and decoration of those splendid edifices, the very fragments of which are so massy and imposing. "We had scarcely passed," says Mr. Wood, "these remarkable buildings [the sepulchres of the ancient Palmyrenes], when the hills opening, discovered to us all at once the greatest quantity of ruins we had ever seen, and behind them, toward the Euphrates, a flat waste, as far as the eye could reach, without any object which showed either life or motion. It is scarcely possible to imagine

anything more striking than this view. So great a number of Corinthian pillars, with so little wall or solid building, afforded a most romantic variety of prospect." We sometimes find," says a celebrated traveller, "a palace, of which nothing remains but the courts and walls; sometimes a temple, whose peristyle is half thrown down, and now a portico, a gallery, or triumphal arch. Here stand groups of columns, whose symmetry is destroyed by the fall of many of them; there we see them ranged in rows of such length, that, similar to rows of trees, they deceive the sight, and assume the appearance of continued walls. On which side soever we look, the earth is strewn with vast stones, half buried with broken entablatures, damaged capitals, mutilated friezes, disfigured reliefs, effaced sculptures, violated tombs, and altars defiled by mud." These ruins, which consist chiefly of temples, palaces, and public edifices, built mostly of white marble, occupy an area of three miles in circumference; but the ancient city, the greater part of which has now disappeared, is allowed to have extended to nearly four times that space.

They were accidentally discovered by some English travellers from Aleppo somewhat more than a century ago. By far the most remarkable is the temple of the Sun, of which the ruins are spread over a square of 220 yards. It was encompassed with a stately wall built of large square stones, and adorned with pilasters within and without to the number of sixty-two on a side. Within the court are the remains of two rows of very noble marble pillars, 37 feet high, with their capitals of exquisite workmanship. Of these only eighty-eight remain



An Arab sitting amid the Architectural Ruins of Palmyra.

entire; but there must have been many more, for they appear to have gone round the whole court, and to have supported a double piazza. The walks on that side of the piazza which is opposite to the front of the castle, seem to have been the most spacious and beautiful. At each end of this line are two niches for statues, with their pedestals, borders, supporters, and canopies carved with the utmost propriety and elegance. The space within this enclosure, which is now filled with the dirty huts of the inhabitants, seems to have been an open court, in the middle of which stood the temple, encompassed with another row of pillars of a different order, and much taller, being 50 feet high, but of these sixteen only remain. The whole space contained within these pillars is 59 yards in length, and near 28 in breadth. The temple is no more than 33 yards in length, and 13 or 14 in breadth. It points north and south; and exactly into the middle of the building, on the west side, is a most magnificent entry, in the remains of which are some vines and clusters of grapes, carved in the most bold and masterly imitation of nature that can be conceived. Over the door are discerned a

pair of wings, which extend its whole breadth, the body to which they belonged is totally destroyed, and it can not now be certainly ascertained whether it belonged to an eagle or cherub, several representations of both being visible on other fragments of the building. It is observed of the windows which were not large, that they were narrower at the top than below. The north end of the building is adorned with the most curious fret-work and bas-relief; and in the middle there is a dome or cupola about ten feet in diameter, which appears to have been either hewn out of the rock, or moulded to some composition, which by time has grown equally hard. North of this place is an obelisk, consisting of seven large stones, besides its capital and the wreathed work about it. It is about 50 feet high, and immediately above the pedestals is 12 feet in circumference. There was probably a statue upon it, which the Turks, in their zeal against idolatry, destroyed. At about the distance of a quarter of a mile from this pillar, to the east and west, are two others, besides the fragment of a third, so that perhaps they were originally a continued row. About 100 paces from

the middle obelisk, straight forward, is a magnificent entrance to a piazza, which is 40 feet broad, and more than half a mile in length, enclosed with two rows of marble pillars, 26 feet high, and 8 or 9 in compass. Of these there still remain 129, and by a moderate computation there could not have been less than 560. The upper end of the piazza was shut in by a row of pillars, standing somewhat closer than those on each side. A little to the left are the ruins of a stately building, which appears to have been a banqueting-house. It is built of better marble, and finished with greater elegance, than the piazza. The pillars which supported it were of one entire stone, which was so strong that one of them which has fallen down has received no injury. It measures 22 feet in length, and in compass 8 feet 9 inches. In the west side of the piazza are several apertures for gates into the court of the palace. Each of these was adorned with four porphyry pillars, not standing in a line with those of the wall, but placed by couples in the front of the gate facing the palace, two on each side. Two of these only remain entire, and but one standing in its place. They are 30 feet long, and 9 feet in circumference. On the east side of the piazza stands a great number of marble pillars, some perfect, but the greater part mutilated.

In one place eleven are ranged together in a square; the space which they enclose is paved with broad flat stones, but there are no remains of a roof. At a little distance is a small temple, also roofless, and the walls very much defaced. Before the entry which looks to the south is a piazza supported by six pillars, two on each side of the door, and one at each end. The pedestals of those in front have been filled with inscriptions, both in the Greek and Palmyrene languages, which are become totally illegible.

Among these ruins are many sepulchres; they are ranged on each side of a hollow way, toward the north part of the city, and extend more than a mile. They are all square towers, four or five stories high; but though alike in form, they differ greatly in magnitude and splendor. The outside is of common stone, but the floors and partitions of each story are marble. There is a walk across the whole building in the middle, and the space on each hand is subdivided into six partitions by thick walls. The space between the partitions is wide enough to receive the largest corpse, and in these niches six or seven are piled upon one another.

In the neighborhood of Palmyra are some salt marshes, and to the adjacent country a trade is carried on in kelp from Tripoli to Syria.

There are two Arab tribes, almost equally powerful,—one of them, called Annecy, remarkable for the finest horses in the world, possesses the country to the southwest, at the back of Libanus, about Bozrah, and southward toward the borders of Arabia-Petræa and Mount Horeb. The other, named Mowalli, inhabits the plains east from Damascus to the Euphrates, and north to near Aleppo.

Of their manners and customs we know little; we can, however, glean sufficient to see that these people copied after great models in their manners, their vices, and their virtues. Their funeral customs

were from Egypt, their luxury was Persian, and their letters and arts were from the Greeks. Their situation in the midst of these three great nations, makes it reasonable to suppose they adopted several other of their customs. But to say more on that head, from such scanty materials, would be to indulge too much conjecture, not certainly the office of the historian.

IDENTITY OF PERSONS.

It is a most extraordinary phenomenon, that amid the countless myriads of human beings that have been created, a distinctive individual appearance should appertain to each one. The masses of mankind have, by original decree, or the influence of surrounding circumstances, become parcelled out into various nations, each having their peculiar characteristic forms and features; but among none of these (not even the Jews and Gypsies, in whom the practice of intermarriage has contributed to maintain a so remarkable general resemblance) have the marks of the personal identity of the individual been destroyed. Yet there exist some exceptions to this law of identity, and the consideration of some of these may prove not only interesting, but of practical utility.

Although, says Foderé, no two persons do exactly resemble each other, and, on close observation, a distinctive physiognomy may be observed, even in children (and twin children, too) of the same family; yet, the distinguishing traits of some individuals are either so slightly perceptible, or have become forgotten, and thus many persons have been known, without any interested motive, but purely through ignorance, to attest as true what was really false; fathers, mothers, husbands, and wives, have been thus led away by illusions—erroneously denying or maintaining the identity of their children, or of each other.

Pliny devotes a section in the seventh book of his "Natural History" to "Exempla Similitudinum." He says that it was hardly possible to distinguish Pompey the Great from the plebeian Vibius and the freedman Publicius; each of these persons resembling him so closely in his noble and generous deportment and handsome countenance. Cneus Scipio was nick-named Serapion, from a striking likeness to a low slave of that name who sold animals for the sacrifices; while one of his descendants, and the consuls Lentulus and Metellus, were each called after certain actors whom they so nearly resembled. A fisherman of Sicily resembled the proconsul Sura not only in features, but also in possessing a peculiar defect of speech. Toranius sold to Antonius, when triumvir, two children of a rare beauty and a perfect resemblance, although the one was born in Asia, and the other beyond the Alps. He passed them off as twins, but their language afterward betraying the deception, Antonius reproached the seller with having obtained a far too enormous price for them. Toranius, nothing abashed, replied that the very point which was considered a defect in these children, was, in truth, their highest recommendation; for while a resemblance between two twins could not be

looked on as extraordinary, an example of its existence between two children, born even in different countries, was worthy of the highest recompense. Antonius henceforth considered his purchase as the most valuable of all his articles of *vertu*.

Impostors of various kinds have made the resemblance they bore to other individuals an instrument of practising their deceptions; and some of these have in this way even aspired to the attainment of sovereign power. One of the most remarkable of these is met with in Russian history, under the name of the false Demetrius. The celebrated Czar Basilovitz, dying in 1484, left two sons, the one who became czar, named Theodore, and the younger named Demetrius. The new czar, being a very weak man, allowed all the power to pass from his hands into those of his minister Boris, who persuaded him that for the security of his reign the assassination of his brother Demetrius was necessary; and this was accordingly accomplished. The czar himself died in a few years, and it was suspected that Boris had poisoned him. With him the line of Ruric, which had governed Russia 700 years, became extinct, and Boris procured himself to be declared czar.

In 1604 a monk named Ostrefief, who bore a remarkable likeness to the murdered Demetrius, and possessed various qualifications essential to the acquisition of popularity, declared that he really was Demetrius, and that the person who had been assassinated had been substituted for him when he had the good fortune to make his escape. The people, disliking the government of Boris, and attached to the ancient royal race, lent a greedy ear to his representations. Many persons, who had well known the prince from certain marks, declared that this person was really him. He was encouraged by some wealthy nobles, and the king of Poland supplied him with a small army to assert his rights. His progress was notorious, and in 1605 he was crowned at Moscow, Boris having previously in despair taken poison. The widow of Basilovitz, who had been banished, was now sent for by the pretended Demetrius, and with tears in their eyes they recognised each other upon their meeting. The credit of the new czar now seemed fully established; but his imprudence prevented his reign continuing. Having married a Polish princess, he showed so undue a partiality to the countrymen of his wife, to whom indeed he owed so much, and so great a disposition to encourage the Catholic religion, that a conspiracy was speedily organized against him. The old czarina was compelled to recant her avowal of him as her son, declaring she had only pretended to recognise him, as seeing in him an instrument for the chastisement of the oppressors of her race. He was assassinated during the rebellion. No less than *five* other impostors pretended afterward to be Demetrius; but into their history, or into that of the various wars and tumults they occasioned, we can not enter, as in no instance, except the first, were the pretensions grounded upon the exactness of the personal resemblance.

Russia has witnessed another impostor in more recent times. A Don Cossack, named Pugatscheff, having been sent to the camp with despatches, was

observed by all the officers to bear a remarkable resemblance to the murdered emperor Peter. He resolved to turn this to good account, and having spent some time in Poland in perfecting his scheme, he returned to Russia in 1773, and by spreading the report that he was the emperor, who had escaped from the hands of the assassins, contrived to raise a considerable force among the Cossacks, and for more than a year maintained a most harassing warfare. At last his followers, disgusted with his cruelty and brutality, and stimulated by an immense reward, betrayed him to Count Panin, when he was taken in an iron cage to Moscow, and there executed in 1775.

In France several persons have personated the dauphin, the son of the unfortunate Louis XVI., who died in prison during the reign of terror, but whom they declared to have escaped. Among these, one Hervégault, the son of a tailor, from his strong likeness to Louis XVI., was induced to pass himself off for his son. Persons even of high rank were deceived by him, and induced, in spite of his repeated imprisonments, to pay him royal honors. He died in the Bicetre in 1812. Some years after, another impostor, named Bruneau, excited considerable attention, and in 1818 was imprisoned for seven years.

The two celebrated instances of impostors which occurred in England during the reign of Henry VII., Lambert Simmel and Perkin Warbeck, are not cases in point, as they did not attempt to compass their ends by insisting upon the personal resemblance, but rather by natural address and a skilful employment of historical and family facts, which could only have been acquired from a careful tuition.

Cases of near resemblance are in fact of by no means rare occurrence, and difficult questions of identity are frequently brought before courts of law, some of those which are upon record being of a very interesting nature. Decisions as to heritage and affiliation, nay, affecting life itself, have frequently depended upon the establishment of identity. In that rich repertorium of legal lore, the *Causes Celebres*, many remarkable cases of disputed identity are to be found; a brief notice of a few of these may prove interesting.

A noted example was determined by the parliament of Toulouse in 1560. Martin Guerre had been absent from home eight years, when an adventurer, named Arnould Dutille, personated him, and took possession of his property; he had children by Guerre's wife, but neither she nor her sister and brother-in-law suspected the deceit for three years. Some suspicious circumstances then arising, the case was taken before the tribunals, when not less than three hundred witnesses were examined, some of whom positively declared that the accused was Guerre, others as positively that he was Dutille, while a third set declared they could not distinguish the one from the other. The judges were reduced to the greatest perplexity, when the real Guerre appeared. The effrontery of Dutille well nigh disconcerted him, but upon direct personal comparison the wife and sister at once acknowledged him as their relative.

De Caille, a Protestant, fled into Switzerland at the revocation of the Edict of Nantes. His son died

in his presence at Vervoi. Some years after, a marine and a Protestant, wishing to obtain the estate by abjuration, declared himself to be the young De Caille, to whom he bore a great resemblance. He was prosecuted as an impostor. Some hundred persons testified as to his identity, among whom were women who had nursed De Caille's child, and old servants of the family. Public enthusiasm became excited in his favor, as it was stated that the opposition to his claims was got up by the Protestants in order to prevent him embracing the Catholic faith. Persons of consequence espoused his cause, and in vain were proofs offered that his true name was Mege, and that the young man whom he personated was really dead. He was put into the full possession of the estate, and shortly afterward married advantageously. But here he carried matters too far, for he had already a wife, who, having hitherto connived at his proceedings in the hope of sharing in the spoil, finding herself duped and deceived, betrayed his secret. The case was now more carefully reinvestigated at Paris, when it was found that certain physical marks, known to have existed upon young De Caille, were not to be discovered upon the impostor.

Two children belonging to a widow, named Le Moine, strayed away from home during her absence. About a year after, a mendicant came into the church where the widow was, leading by the hand a little boy. All the inhabitants of the vicinity, struck by its exact resemblance, declared this to be one of the lost children. The mother, however, denied the identity. Her neighbors, among whom was a person who had nursed the child for three years, and the surgeon who had attended it during an illness, protested against her unnatural conduct in denying her child; and the beggar was thrown into prison. The child itself was cunning enough to prefer a life of ease to one of mendicancy, and by its replies only confirmed the existing prejudices. Things so continued, when one day one of the widow's sons returned, and stated that the brother who had run away with him, fell ill and died, and to corroborate what he said, he produced a certificate signed by the minister of the parish and the resident of the house in which the boy had died.

A very singular case occurred in New York in 1804. A man was tried as one John Hoag for bigamy. He denied the identity, and declared his name to be Parker. Numerous witnesses swore that he was really Hoag, and, among others, the woman whom that person had married and deserted. Hoag was, moreover, said to speak quick and lisping, to have a scar on his forehead, and a mark on his neck, all which circumstances were observed regarding the prisoner. Two witnesses, however, distinctly swore that Hoag had a very visible scar upon the sole of the foot, produced by treading on a knife, but this mark did not exist upon the prisoner. He afterward proved an alibi.

One Redman was accused of robbing a Mr. Brown, and one of the witnesses, on cross-examination, said he knew a man, then in custody, who so resembled the prisoner, that he should not know the one from the other. These men were placed side by side in

court, and every one was astounded at their exact resemblance.

When the twin brothers Perreau were tried for perjury, their resemblance was so complete, that the scrivener, who had drawn up eight bonds at the order of the one or the other, did not know upon which of them to fix the charge. Dr. Montgomery mentions an instance of twins only to be distinguished by their parents by means of their dress.

The above cases would lead us to conclude that in all criminal trials the greatest caution must be employed in pronouncing upon cases of doubtful identity, and the melancholy fact that several innocent persons have suffered death through their identity having been mistaken, proves the absolute necessity of such caution.

Dr. Montgomery relates that a gentleman was robbed near Dublin, and a man placed upon his trial as the perpetrator, and convicted upon the prosecutor's testimony; but, owing to prior good conduct, he was recommended to mercy. A few days after, the gentleman was horror-struck at meeting in a road with the very man who had really robbed him. The error in this case seems to have arisen from the defective quantity of light, and the question has been mooted, as to what degree of light is essential to enable a witness to swear to identity. The French Institute decided, after numerous experiments, that the degree of illumination caused by the flashing of a pistol was not sufficient for this purpose. A Bow-street officer, however, identified a robber by this means in 1799; and Dr. Montgomery mentions an instance of a lady obtaining a sufficient view of a robber during a flash of lightning to be enabled to recognise him again.

Two men, named Clinch and Mackay, suffered death in 1797, for the murder of Mr. Fryer, their identity being sworn to by Miss Fryer. Some years after, two thieves, executed for another offence, declared that they were Mr. Fryer's murderers.

Alluding to the case of Colman, who was unjustly executed for rape, Dr. Paris observes: "The melancholy case of Colman will impress my reader with the importance of carefully noticing the circumstances of *dying declarations*, lest, by receiving as evidence the ravings of delirium, or at least the imperfect impression of impaired faculties, the innocent should be sacrificed to the errors of the dying; and this is the more necessary in those cases wherein the atrocity of the crime committed creates an immediate prejudice against the party charged or suspected."

As on the one hand a person may be condemned through a mistaken identity, so, on the other hand, many circumstances may produce so great an alteration of the personal appearance, that a true identity may be denied. The brethren of Joseph knew him not, and Ulysses was only recognised by his dog. The learned Lacchias relates an instance of this: Andrew Casali, a Bolognese nobleman, having been absent from his country for thirty years, was supposed to have died in battle, and his heirs took possession of his property. He, however, returning at last to Italy, and claiming his rights, was sent to prison as an impostor. Indeed he was so completely chan-

ged in appearance, that his recognition was impossible: at this he was in nowise surprised, since, having fallen into the hands of savages, he had sustained several years of cruel bondage. Lacchias, to whom the case was referred, decided that circumstances may so change the appearance as to render it unrecognisable, and Casali was reinstated in all his rights.

Lacchias enumerates the various circumstances which may have an influence in producing this change. The effects of mere age, and of the increase or decrease of corpulency, are known to every one. The change of color of the eyes, and of the hair, especially of the latter, is remarkable; thus, almost all children are born with blue eyes and light hair. Change of climate seems to have much effect in darkening or rendering gray the hair—the red color longest resisting its influence, and after it the black. Intense grief may whiten the hair instantaneously, and this is said to have occurred to Marie Antoinette; and Lemnius relates that a criminal, a fine young man, being condemned to death, his hair turned suddenly white. The emperor, when he saw this, thought his hair had been whitened artificially, or that some one had been substituted for the criminal; but on learning the genuineness of the change, he pardoned the man, saying that the dreadful moral convulsion he had undergone was ample punishment. Climate produces many other remarkable changes, as may the various aliments to which the absent person has been accustomed, or the different diseases from which he has suffered. Walter Scott has some lines in “Marmion,” beautifully illustrative of this part of our subject:—

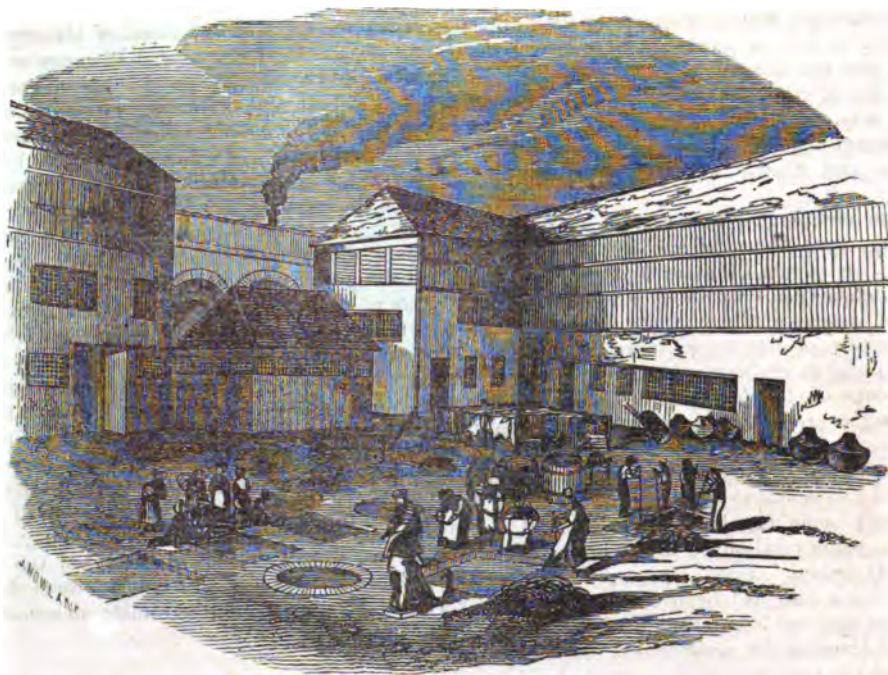
“Danger, long travel, want, and wo,
Soon change the form that best we know:
For deadly fear can time outgo,
And blanch at once the hair.
Hard toil can roughen form and face,
And want can quench the eyes’ bright grace,
Nor does old age a wrinkle trace
More deeply than despair.”

It must be allowed, then, that the establishment of identity is frequently a matter of infinite difficulty, and authors have not been able to lay down rules for so doing. Orfila considers that the condition of the hair may frequently aid in proving it; and as no putrefaction occurs in this structure, the mark is available after death. In general the declaration of the identity of dead persons is even far more difficult than is the case with regard to the living, as the features undergo so marked a change. Scars and cicatrices, original or mother-spots, and congenital malformations, form the most unexceptionable marks of identity.

Although the greater number of the narrations concerning supposititious children are the mere offspring of popular credulity and the love of the marvellous, yet in some cases the establishment of the identity of a claimant of an inheritance has been a matter of infinite difficulty. The Anglesey and Douglas cases are celebrated instances of this, that excited a vast degree of interest in the public mind during the periods of their agitation. Lord Mansfield, in delivering the judgment of the House of Lords respecting the latter, laid great stress upon the existence of a

family likeness as one proof of identity. He says: “I have always considered likeness as an argument of a child being the son of a parent; and the rather as the distinction between individuals of the human species is more discernible than in other animals; a man may survey ten thousand people before he sees two faces perfectly alike; and in an army of a hundred thousand men, every one may be known from another. If there should be a likeness of feature, there may be a discriminancy of voice, a difference in the gesture, the smile, and various other characters; whereas a family likeness runs generally through all these; for in everything there is a resemblance, as of features, size, attitude, and action.” In respect to family likeness, Dr. Gregory used to relate the following anecdote: Being called to a rich nobleman, residing in one of the provinces of Scotland, he was struck with the exact resemblance the form of his nose bore to that of a portrait of the grand chancellor of Scotland in the reign of Charles I. In walking through the village next day, he observed the same configuration in several of the inhabitants, and the nobleman’s steward informed him that all these persons were illegitimate descendants of the chancellor.

ANIMAL POISONS.—The venom of the bee and the wasp has a liquid contained in a small vesicle, forced through the hollow tube of the sting into the wound inflicted by that instrument. From the experiments of Fontana, we learn that it bears a striking resemblance to the poison of the viper. That of the bee is much longer in drying when exposed to the air than the venom of the wasp. The sting of the bee should be immediately extracted; and the best application is opium and olive oil; one dram of the former finely powdered, and rubbed down with one ounce of the latter, and applied to the part affected by means of lint, which should be frequently renewed. From the rapidity with which these animals destroy their prey, and even one another, we can not doubt that their poison is sufficiently virulent. Soft poultices of fresh flesh, bread and milk, or in the absence of these, even mud, are excellent applications to the sting of insects, and even the bites of the most venomous snakes. The specifics recommended in such cases for internal use, are not to be compared in efficacy with the timely application of a poultice of the flesh of a chicken or other animal recently killed. The flesh of the rattlesnake itself is in some parts of America reckoned to possess specific virtues, and doubtless will answer nearly, if not quite as well, as any other good soft and moist poultice, which will seldom fail to effect a cure when promptly applied and frequently renewed. In this way the irritation and inflammation induced by the poison in the part bitten, is often arrested and prevented from extending to vital parts. These conclusions are the results of experiments made with the poison of the rattlesnake, in which the most celebrated Indian and other specifics were used with little or no advantage.



A DAY AT A LEATHER FACTORY.

THE processes involved in the fabrication of leather, although in many respects remarkable and interesting, are very little understood beyond the circle of manufacturers and dealers. It is generally known that the avocations of the tanner, the currier, the fell-monger, the tawer, the leather-dresser, all relate in some way or other to the preparation of leather; but the relation which these employments bear one to another is not so well understood.

Leather has been designated by Dr. Ure as "the skin of animals, so modified by chymical means as to have become unalterable by the external agents which tend to decompose it in its natural state." The gelatinous portion of the skin is made to combine with chymical substances artificially applied, and by this combination the new substance, leather, is produced. The ingredients employed for the conversion of skin into leather are different in different cases, and give rise to various subdivisions of employment in the leather-manufacture. The classification of the different kinds of leather might be made according to the animals whence the skins were obtained, or according to the thickness and quality of the skins, or according to the purposes to which the prepared leather is to be applied; but we think that the purpose of the present article will be better answered by making a classification according to the mode of manufacture; and we shall therefore speak of leather as prepared—1st, by oak-bark; 2d, by sumach; 3d, by alum; and 4th, by oil: these four varieties being remarkably distinguished one from another.

The leather prepared by tanning with oak-bark is the hide of the ox, the calf, and the horse, all of which possess sufficient firmness to be applied to the manu-

facture of shoes, harness, and other articles requiring great strength and durability. The skins prepared by a substance called sumach are principally those of the goat and the sheep; and the leather resulting from the process is morocco leather, for coach-linings, chair-covers, book-binding, ladies' shoes, &c.; roan for shoes, slippers, and common book-binding; and skiver, an inferior leather, for hat-linings, pocket-books, work-boxes, toys, and other cheap purposes. The skins dressed in alum are principally those of the kid, the sheep, the lamb, and in some instances the calf; and the leather produced is principally employed for gloves and ladies' shoes. Lastly, the skins dressed in oil are those of the sheep, the buck, and the doe, and the resulting leather is that of which riding-gloves and similar articles are made, as well as the soft wash-leather, or chamois leather, familiar to every one.

Although the processes whereby these varieties of leather are produced differ very distinctly one from another, yet the establishments wherein they are conducted present a generally similar appearance. The tanyards and leather manufactories each present to the view of a stranger an open court or yard surrounded or partially surrounded by buildings, some of which are so constructed as to admit the access of air to every part of the interior. The surface of the court or yard is in most cases intersected by pits, or square cisterns, in which the skins are steeped during some part of the manufacturing process. All bear a general resemblance, too, in two circumstances not altogether attractive to visitors, viz., the presence of unpleasant odors, and the absence of cleanliness.

1. *Leather prepared by Tanning.*—When an ox has been slaughtered, the hide removed, and the flesh transferred to the butcher, the hide is sold to the

tanner, by him to be converted into the thicker kinds of leather. The hide passes into his hands with the horns attached; and he separates these from the hide, and sells them to the comb-makers and other manufacturers of horn. The hair is also attached to the hide, but the removal of this is a more difficult operation.

When the hide is purchased by the tanner, there are little bits of flesh, &c., adhering to the inner surface; and these are removed by a process called "fleshing." The hide is spread out over a convex wooden bench called a "beam," and is then scraped with knives of a peculiar shape, by which all extraneous matters are removed, and the hide is pared down to the cutis. After this process the hair is to be removed, and this is effected in one of two ways, according to the nature of the skin. One method consists in mixing together quick-lime and water, and immersing the hide in the solution; after remaining there several days, and having the lime-water renewed occasionally, the bulbous roots of the hair have become so far loosened by the action of the lime, as to be easily pulled out. The hide is then spread out on the beam, and "unhaired," that is, scraped with a knife till the hair is removed. In the other method, adopted in some kinds of skins which would be injured by the action of lime, several skins or hides are placed in a close chamber, where they undergo a kind of natural fermentation, sufficient to loosen the hair from the skin.

When by either of these methods the hair has been removed, the hide is "grained," or scraped and then subjected to a process whereby the pores are opened and prepared for the reception of the tan afterward to be applied. In some cases this consists in steeping the hide for some days in a sour solution of rye or barley flour; in others, the bath is a very weak solution of sulphuric acid in water. The hide becomes swollen, softened, and the pores ready prepared for the reception of the tan.

The bark, the roots, and occasionally the leaves of a considerable number of plants, yield, by soaking in water, an astringent solution, usually of a yellowish brown color. This solution has a peculiar action on the living skin corrugating and constricting it; and when applied to dead skin, has the property of converting it into leather. These vegetable substances contain a principle called tannin, which is the agent concerned in converting skin into leather. Provided the tannin is obtained, it matters not much to the success of the process what substance yields it; and the tanner, therefore, employs that which is, on the whole, the most effective and the most economical.

To detail the various systems adopted by different tanners would be wholly foreign to our purpose. The process is so slow a one, and the desirability of increased speed so great, that patent after patent is taken out on the subject; and almost every tanner has some process peculiar to his own establishment. We must, therefore, be as general as possible in our few details. When the hide is properly cleaned and brought to the state called "pelt," it is ready to be placed in one of the tan-pits. These pits are generally rectangular cisterns, whose upper edge is level

with the ground, and whose interior is lined with wood. The tanning ingredient, generally oak-bark, is steeped in the cistern of water, and the solution is then technically termed "ooze." The hide is in the first instance put into a pit containing nearly-spent ooze, in which hides have already been steeped, and which has consequently lost more or less of its tanning principle. In this pit the hide is frequently stirred and turned to insure the equable action of the tan on every part. The hide is then transferred to a pit containing stronger ooze, or else is stratified with crushed bark; several hides being laid one on another, and steeped in water. Whether the hides be placed at once in prepared solution of bark, or be stratified with bark in a pit containing water, depends upon the system of tanning pursued by the manufacturer, and upon the quality of the hide; but in either case the hides are exposed to renewed portions of the tanning ingredient from time to time, until the tannin has combined intimately with the animal substance. In most tanneries several months are consumed in this process of steeping in the tan-pits; and although numerous patents have been granted for improved and more expeditious processes, the limited extent to which these are adopted seems to show that there is some advantage afforded by lengthened time, not altogether attained by the speedier processes. This is a point on which we can not enlarge here: it must suffice to say that the object of tanning, whether by a slow or a speedy process, is to cause the tanning principle to penetrate into all the pores of the hide from surface to surface: when this is effected, the hide has become transformed into leather. When the hide is tanned, it is hung up in an airy loft, or drying-room; and during the process of drying is compressed by beating, by pressure with a steel instrument, or by being passed between rollers, which gives it a smooth and dense texture.

The stoutest hides, from bulls, buffaloes, oxen, and cows, are tanned in a way more or less resembling that above detailed, and are then used principally for the soles of boots and shoes. The time employed in tanning a hide for the soles of men's boots in general is from six to twelve months; while a still thicker quality, known as "butts" or "backs," sometimes consumes fifteen months in the process. The skins of calves, seals, and the lighter kinds of horse and cow skins, are tanned to form the "upper leathers" of boots and shoes, and are prepared in a somewhat similar but more expeditious manner. After having been "unhaired," they are steeped for eight or ten days in an alkaline liquor, being at intervals taken out and scraped on both surfaces, by which the lime oil, and gelatinous matter are forced out from between the pores, and the skin rendered soft, pliant, and fit to receive the tanning ingredient. They are then exposed to the action of tan in the tan-pits until converted into leather.

Leather intended for the upper parts of boots and shoes, for saddlers, and for coach-makers, passes into the hands of the currier after-tanning, for the purpose of being softened, equalized in thickness, smoothed, blacked, &c. The currier dips the tanned skin in water to moisten it, and then softens the texture by

beating it with a "mace:" this instrument consists of a wooden handle two or three feet long, with a cubical head at one end. He then places the skin on an inclined plane called a "horse," and equalizes the thickness by the aid of a broad, straight, two-handled knife, called a "cleaner," which is worked in such a manner as to shave off the superfluous thicknesses of the skin. After this the leather is thrown again into water, and rubbed on the grain or outer side with pumice or gritstone; whereby the "bloom," a whitish matter derived from the action of the bark, is removed. The leather is then rendered flexible by being rubbed, first on one side and then on the other, with an instrument called a "pommel," consisting of a piece of wood fastened to the hand by a strap on one side, and having on the under surface a number of parallel grooves, which have the effect of bringing the leather to a high state of flexibility. The leather is again scraped with a broad knife, to equalize its thickness and texture. Then, according to the quality of the leather, and the purposes to which it is to be applied, it is dressed with oil, with oil and lampblack, with tallow, &c.; and is polished with rubbers of hard wood.

2. *Leather prepared with sumach.*—We now come to those varieties of leather which will enable us to refer more particularly to the establishment selected for our visit on this occasion. The manufactory known as the Neckinger mills, Bermondsey, is one in which nearly all the kinds of leather prepared with sumach, alum, or oil are manufactured. The term "mills" is applied, because the premises were once occupied by a company formed for the manufacture of paper from straw, and were then known as paper-mills; the water for the manufacture being supplied by the Neckinger tide-stream, which flows past the building twice a-day from the Thames.

On entering the gates which form the communication from the high road to the factory, we find ourselves in the open yard represented in the frontispiece. In various parts of this yard are pits, some rectangular and some circular, used not as tan-pits for tanning skins, but as lime-pits for loosening the hair and wool. Here and there are men employed in "drawing," or lifting out the partially-limed skins, and in transferring them from place to place. Southward of this yard is another occupied principally by lime-pits similar to the others, and by lines whereon wetted skins are hanging to dry. Around the large or principal yard are ranges of buildings employed for various purposes. In one range are extensive ware-rooms for finished leather of the morocco kind; in another the white leather is contained; over these are drying-lofts, in which the skins are hung at a certain stage in their manufacture. In another part of the premises are the vessels for tanning skins with sumach; in a third the die-house, where the morocco leathers are died; in others are three or four leather-splitting machines, fulling stocks for chamois leather, a rotating vessel for alumed leather, and various other arrangements, of which we shall speak presently. The large quantity of water employed in the several branches of the manufacture, and the necessarily dirty processes involved, keep the great-

er part of the buildings in a wet and sloppy state; and the existence of several dozens of cisterns or pits in the open yards render necessary some little circumspection in the steps of a visiter: indeed, this circumspection is desirable on more accounts than one, for there is a sort of "standing order" among the workmen, that although an immersion in one of the pits is open to any one, the extrication from it is valued at half-a-crown.

The most important leather prepared by tanning with sumach is the morocco leather made from goat-skins. The term "morocco" is probably derived from the country of that name, but we are not aware whether this species of leather was originally manufactured there. Be this as it may, the finer kinds of morocco leather, employed for coach-linings, chair-covers, &c., are prepared from goat-skins; while the inferior or "imitation" morocco, applied to purposes wherein cheapness is desired, is made from sheep-skin. Morocco is familiarly known to most persons as a glossy-colored leather, whose surface presents a wrinkled and fibrous appearance; and we perhaps can not better illustrate the process of preparing leather by sumach than by tracing the manufacture of this variety.

The goat-skins employed for this purpose are imported from various parts of the world—Switzerland, Germany, Memel, Mogadore in Northern Africa, the East Indies, the Cape of Good Hope, Asia Minor, and other places. The skins from some places are preferred on account of their thickness or good quality; from others on account of their size; while others are purchased according to the supply which may happen to be in the market. The skins are imported with the hair on, and to remove this is one of the first processes of the manufacture. The goat-skins are first soaked in water for several days to soften them, and then undergo the process of "breaking," that is scraping them on the flesh side to remove the adherent substances which would interfere with the process of tanning. The "fleshings" and other scraps obtained in processes similar to this are placed on open racks or stages exposed to the air, and when dry are sold to the manufacturers of glue and size; as are likewise the fleshings and other



"Drawing" Goat-skins.

scraps from the thicker hides and skins prepared by the tanner.

Into the lime-pits before noticed a solution of lime in water is conveyed, and the goat-skins, after being fleshed, are allowed to soak therein for four or five weeks. During this time they are frequently "drawn," a process represented in the annexed cut, and consisting in taking the skins out of the pit, laying them in a heap on the side, allowing them to lie thus for a certain time, and immersing them again; all this has the effect of causing the lime to act equally on every part of the hairy covering, and the lime water is renewed once or twice, to aid in producing the desired effect.

When the liming has been carried to such an extent that the hair can be easily pulled out with the finger, the goat-skins are drawn from the pits, and conveyed in wheelbarrows to the "fleshing-shop," one of the buildings in the western part of the premises. In this shop are a number of "beams," as they are called, consisting of convex work-benches or stools sloping downward from one end to the other, and supported on a frame or stand. Each goat-skin is laid smoothly on a "beam," with the hairy side uppermost; and the workman, standing at the upper end of the beam, scrapes off all the hair by means of a double-handled knife. The convex form of the surface on which the skin is laid, and the peculiar form given to the knife, enable the workman to take off all the hair very completely. The operations of "fleshing," of "unhairing," and of "graining," are so nearly alike in

can not reach the heart of the skin. The tanning, therefore, can not be commenced until the lime is removed and the pores opened. The means adopted for effecting this are by far the most disagreeable in the whole range of the manufacture. A solution called the "pure" or the "pewer" (having never seen the word written or printed, we must spell it as pronounced), is prepared in a large vessel, and into this the skins are immersed: there is an alkaline quality in the solution employed, which has the effect of removing the lime from the pores, and the manufacturers seem to have failed hitherto in finding more than one substance which yields this quality effectually. Whether chymistry may hereafter afford them a more extensive range it is not for us to say, but such would seem to be at least probable. After being "pured" for some time, the skins are taken out and scraped well on both sides, for the sake of removing as much of the lime and the albumen as may be removeable by these means; and after this they are steeped again.

By these operations the pores of the goat-skin are so far opened and cleared as to prepare them for the reception of the tanning principle. The substance employed in tanning stout hides is, as we before explained, oak-bark; but for goat-skins the tanning ingredient is a vegetable substance called *sumach*. This is the powder of the leaves, peduncles, and young branches of a plant called the *rhys coriaria*, growing in Sicily, Italy, and Hungary. It is one of the substances experimented on by Sir H. Davy in his inquiry into the tanning properties of various bodies; and he found it to contain a large proportion of tannin. It contains also a light coloring-matter, which seems to render it useful for the tanning of light-colored leathers. It is employed extensively in dyeing, as well as in leather-dressing. In the sumach tan-houses referred to we saw a pile of this substance, just as imported from Sicily, in cloth bags containing about one cwt. each: when the bags are opened, the sumach appears as a fine yellow powder.

The manner in which this tanning ingredient is forced into the pores of the goat-skin is exceedingly curious. The sumach is mixed with water; but if the skins were immersed indiscriminately in the solution, or even laid smoothly on one another, the sumach would not act equally on the whole surface. To produce the desired equality of action, the following singular plan is adopted: The wet goat-skins are taken from the "pure," or alkaline solution, and sewn



Unhairing a Goat-skin

their general appearance, that the annexed cut will sufficiently show the character of the whole; the principal difference being in the edge of the knife employed by the workman. The hair which is thus removed from the goat-skins is, after being cleansed, sold to the carpet-manufacturers and to plasterers.

After the process of "unhairing," the goat-skins are again soaked in lime-water for two or three days, and are then again "fleshed," or scraped on the inner surface, by which the cutis is brought to a tolerably clean state. But the long steeping which the skin has undergone has had the effect of driving the lime into the pores, inasmuch that the tanning principle contained in the sumach, afterward to be applied,



Sumach Tan-tub.

up by women into bags, each skin forming a bag with the grain side outward, and having no opening except a small one at that part which had formed the hind shank of the animal. These bags, as soon as made, are thrown into a vessel of water, and examined, to see that they are well sewn up, and free from holes. They are then taken to the sumach-tub, where the process represented in the annexed cut is carried on. A large shallow circular tub, twelve or fifteen feet in diameter, is filled with hot water containing a little sumach, and near it is a smaller vessel containing a strong solution of sumach in water. Two men and a boy, standing on one side of the tub, then fill the bags with the sumach-solution thus: the boy takes a bag, and inserts into its mouth the stem of a funnel, the mouth of which is uppermost. One of the men then nearly fills the bag, through the funnel, with the solution, which he ladles from the smaller tub. The other man takes the bag from the funnel, and by a peculiar action of the breath fills with wind the remaining portion of the interior, and ties up the mouth with string. The air has the effect of distending the bag until quite free from wrinkles, and also of causing it to float in water. All the bags, after being thus filled, are thrown into the large vessel, and are kept there about three hours, occasionally stirred and moved about with a wooden instrument. The effect of this arrangement is, that the solution of sumach contained within each bag is enabled to exert its full action on the skin in an equable manner, and to penetrate entirely through the substance. The thickness of these goat-skins is so very much less than that of the hides formerly described as being tanned by oak-bark, that the tanning principle of the sumach, aided by a certain temperature in the skin and the solution, is enabled to produce its effect in a few hours. The sumach-tubs present a singular appearance when three or four dozen inflated goat-skins are floating about in the contained liquor.

Once during the process of sumaching the skins are removed from the tub and placed on a rack or perforated bench at the side; they are heaped one on another, and by their own weight press all the sumach solution through the pores. Another sumaching and another pressing complete the operation.

The bags are next removed to another building, where the seams are loosened, the bags opened, and the sediment remaining from the sumach removed from the inside: this sediment, which often consists principally of yellow sand nefariously mixed with the sumach before it leaves Sicily, is of no further use in leather-dressing, and is taken away to be used as manure. The goat-skins, after being thoroughly washed, are laid out smooth on a sloping board, and "struck," that is, scraped and rubbed out as smooth as possible. In this smooth state the skins are hung up in a loft, and when thoroughly dried they are said to be "in the crust."

The skins are then nearly ready for the process of dying. It is generally known that most morocco leathers present beautiful and vivid colors, and to produce these the skins have to undergo a very careful process of dying. The drying in the loft has had the effect of shrivelling the skins in some degree; to

obviate which, and to prepare them for the reception of the die, the skins are wetted, and "struck out," or smoothed again. The die-house presents those general features which, whether the substance to be died be cloth or leather, are observable in such places. The die-house contains five coppers for the reception of hot-water or logwood-solution; square tanks for containing the die; frames whereon to suspend the skins in various solutions; and other similar arrangements. As many of the ingredients used in dying are costly, and as the finished leather is intended to be seen only on one surface, it is customary to lay two skins in close contact before dying, so that the dye-liquor may not be wasted by acting on both surfaces of each. The dying ingredients employed, the number of immersions which the skins undergo, the changes in the solutions to which the skins are exposed, and the time employed in the various parts of the process, are points involving much practical skill, and on which we can say but little. The crimson, the scarlet, the purple, the indigo morocco-leather, all require particular modes of treatment, arising from the qualities of the dying ingredients used.

After the dying, the skins undergo two or three processes of rubbing, which seem to act somewhat on the principle of currying, by giving a softness and pliability to the leather. This is especially the case in the finishing process, by which the wrinkled appearance is given to the material. Every one knows that the colored surface of morocco leather has the appearance of having been indented all over by an instrument sharp enough to leave permanent depressions, but not so sharp as to cut the leather. This effect is produced on the smooth goat-skin thus: The workman lays the skin on a sloping bench, with the died surface uppermost, and rubs it forcibly with a ball made of some hard wood, such as box. The ball is about the size of a small lemon, and has on its surface a number of fine parallel grooves. As the ball is worked over the leather in the direction of these grooves, it leaves permanent marks thereon, and thus gives rise to the appearance which distinguishes morocco from all other kinds of leather. Nothing can exceed the beauty and flexibility of the morocco leather made from the finest goat-skins: the finishing of the grooved ball makes it very pliable, while the nature of the skin itself gives it great durability and toughness. In the morocco wareroom at the Neckinger mills the vivid colors displayed show also that this kind of leather is susceptible of receiving a beautiful die.

We have before stated that there is an inferior kind of morocco leather, made of sheep-skin. This, under the name of "imitation" morocco, is largely used for inferior or economical purposes; and though it is inferior to the other kind in suppleness and durability, its superficial appearance is very nearly equal: indeed, it is to this latter fact, combined with greater cheapness, that we may attribute its extensive manufacture. In the manufacture of morocco leather from sheep-skins, there are not many points of difference from the analogous manufacture from goat-skins; but it will be necessary to speak briefly of the different states in

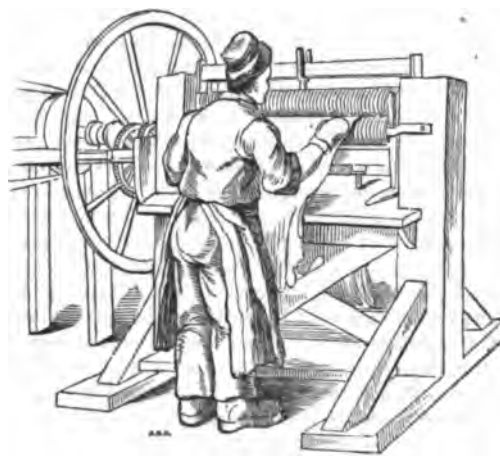
which the skins come into the hands of the leather-dresser.

There are manufacturers called *fellmongers*, whose business it is to bring sheep-skins into a certain state of preparation before the leather-dresser commences his operations thereon. The skins from nearly all the sheep slaughtered are conveyed to a skin-market and there sold by factors or salesmen, who act for the butchers, to the fellmongers. The skins are brought and sold with the wool on, and the labors of the fellmonger relate to the separation of the one from the other, and the disposal of the wool to the woolstaplers, and the "pelts" or stripped skins to the leather-dressers and the parchment-makers. The trade of a fellmonger is more dirty and disagreeable than even that of a leather-dresser, on account of the mode necessary to be adopted for the separation of the wool from the pelt. These remarks, so far as the leather-dresser is concerned, apply only to sheep-skins, for the skins of the goat, the kid, the buck, the doe, and one or two other kinds of animals which have a hairy rather than a woolly covering, come into his hands before the hair has been removed; and the process of "unhairing" is then effected.

In the manufacture of sheep-skins into "imitation" morocco, and into roan leather, a routine of operations occurs not very different from that sketched above. Both kinds are prepared by sumach-tanning; and the preparatory and subsequent processes are for the most part similar to those necessary for goat-skin morocco. There are, however, one or two points of difference which must be noticed. The skin of the sheep, from the organization which promotes the rapid growth of wool, contains a much larger amount of grease, or oleaginous matter, than the skin of the goat; and it is essential that this be removed before the tanning principle is brought to act upon the skin. To effect this, the skins, shortly before being placed in the sumach-tan, are subjected to the action of a hydrostatic-press, which by a pressure of many tons forces out the extraneous matters from the pores of the skin. The kind of leather called "roan" does not present the wrinkled or grained appearance of morocco leather, a difference which results from the different mode of finishing after the dyeing; the grooved balls not being used for the roan leathers.

The kind of sheep-skin leather called "skiver," used for common bookbinding, hat-linings, pocket-books, work-box covers, and other cheap purposes, deserves notice for a process the most remarkable, in a mechanical point of view, which these establishments present: we mean the "splitting" of a skin into two thinner skins. Thin as a sheep-skin is, and supple when wetted, it might be thought that the operation of splitting or slicing it into halves, without cutting holes in either, would be an impossible task; yet this is effected with the utmost accuracy. There is a machine for splitting hides; but the small thickness of a sheep-skin requires peculiar arrangements for effecting a similar bisection. The object aimed at in this operation is twofold, viz., to obtain a thin kind of leather for some purposes for which a sheep-skin in the natural state would be too thick, and to obtain a quality of leather which could be sold at a lower

price than that made from whole skin. The principle of the machine is this: Two rollers, ranged horizontally in a frame, are made to rotate in opposite directions, the vacancy between them being only just sufficient to admit a soft wetted sheep-skin or pelt. The rotation of the rollers causes the skins to be drawn slowly between them; but it can not do so without encountering the blade of a very sharp knife, which has a reciprocating horizontal motion, in such a position as to cut the skin into two thicknesses as it passes the knife, one-half passing over, and the other under the blade. A most ingenious contrivance



Leather-splitting Machine.

is adopted for yielding to any inequalities which may occur in the skin. One of the rollers is made in several pieces, so adjusted that in passing over any thickened portions of the skin the common aperture between the rollers is widened at that part. It is one of the consequences of the construction of the machine, that one of the semi-thicknesses or sections must be equable and level in every part, while any inequalities which might have existed in the original skin will be thrown into the other section. Either section, the "grain" side or the "flesh" side, may have this equable thickness given to it, according to the mode in which the skin is adjusted on the rollers; and the two portions may have various ratios given to their thicknesses, according to the position of the vibrating knife opposite the opening between the rollers. A sheep-skin of the usual size occupies about two minutes in splitting, during which time the knife makes from two to three thousand vibratory motions to and fro, cutting a minute portion of the skin at each movement. The preceding cut represents a sheep-skin undergoing the process of splitting in one of these machines.

As the thin "skivers" are more readily acted on by the sumach-tan than the thicker goat-skins, they are not sewn up into bags like the latter, but are immersed in the sumach-tub in an open state, and are tanned in a very short space of time. The subsequent operations require less delicacy than in the preparation of morocco leather, and do not call for much remark.

Among the varieties of leather tanned with sumach

A DAY AT A LEATHER FACTORY.

is the "enamelled leather," now occasionally employed for ladies' shoes. This is made of seal-skin or thin calf-skin, coated, after tanning, with a peculiar kind of varnish or japan capable of yielding a brilliant gloss.

3. *Leather prepared with Alum.*—The technical name of "tawing" is frequently applied to the general routine of operations whereby alumed leather is produced. This variety of leather is in many cases left white or undied, and has a peculiar softness when finished. The skins which undergo the process of "tawing" are those of the kid, the sheep, and the lamb; the first-named of which yields the well-known "kid leather" of which gloves and ladies' shoes are made; while the white leather made from sheep-skin is used for lining shoes and other inferior purposes. The cheap kid gloves which are displayed in the shop-window of the hosier are generally made from lamb-skin, and may be considered as an imitation kid.

The kid-skins which form the staple of this branch of the manufacture are brought from Italy: they are very small in size, and have the hair on. The first operation to which they are subjected is steeping for the space of three days, by which they become soaked and softened: they are then "broken" on the flesh side, a process resembling that to which goat-skins are subjected: the skin is laid on a beam or convex bench, with the flesh side uppermost, and is then scraped: this seems to facilitate the action of the lime in the next process. After the "breaking," the kid-skin is immersed in lime-water in a pit for about fourteen or sixteen days, by which the hair becomes in some measure loosened from the pelt; and at the end of this period the operation of "unhairing" is effected in the same manner as for goat-skins. In a few days after this process the skin is "fleshed," to procure a clean surface on the inner side, and after this the pores are opened and the lime "killed" (to use a technical term). This opening of the pores is effected not by the alkaline solution called the "pure," as in goat-skin dressing, but by steeping the skin in a solution or "drench" of bran and water. When this is effected, the skin is laid down on the "beam" with the grain-side uppermost, and "struck," or forcibly worked with a knife, whereby the impurities are worked out from within the pores. After a further steeping for a day or two in bran and water, the skin is in a state to undergo that process which constitutes the principal difference between sumached leather and alumed leather. Instead of being sewn up into bags filled with sumach liquor, and immersed in a tub of hot water, the skins are put into a kind of barrel called a "roundabout": this barrel has a door or opening in one part of its curved surface, through which the skins are placed: and when the water and ingredients are added, the door is closed, and the barrel made to rotate rapidly. The effect of the rotation is to cause the impregnated liquor to act intimately on every part of the skin. The substances placed in the barrel to act on this skin are, for the commoner kinds of leather, alum and salt; and for the better kinds, alum, salt, flour, and yolk of eggs: these latter ingredients are for the most part absorbed into the substances of the finer kid leathers, and seem to have the effect of im-

parting that beautiful softness and plumpness which such leather presents. About twelve pounds of alum and a little more of common salt are sufficient for about two hundred skins. Sometimes the skins are not put into the "roundabout," but are merely steeped in the solution in an open tub: whether the one or the other plan be adopted, however, a period of five minutes is sufficient to produce the effect. In that part of the "tawing" process wherein eggs are employed, the eggs are broken, in the proportion of one to each skin, and the yolks only are mixed with water and a little meal in a tub: the skins are then introduced, and are trampled by the naked feet of a man until the egg has been thoroughly imbibed.

The tawed skins, after being hung up in a fort to dry, are stretched out, smoothed and softened, by the process of "staking," represented in the annexed cut.



'Staking' tawed leather.

In one of the upper rooms of the establishment are a number of wooden blocks, having at the upper end a steel instrument, shaped somewhat like a cheese-cutter, but not having a very sharp edge. Over the semicircular edge of this instrument each skin is drawn very forcibly, the workman holding it in both hands, and scraping the surface in various directions on the steel edge. This has the effect of stretching out the skin to its full extent, and of removing all the rigidity and stiffness which it had acquired in the previous processes. This is, indeed, one of the many processes of violent rubbing, scraping, or friction, to which every kind of leather is more or less subject in the progress of manufacture; but in this instance the rubbing is effected when the leather is nearly in a dry state.

For the production of "imitation" kid leathers the skin of lambs is employed; and for this purpose lamb-skins are imported from the shores of the Mediterranean. They are imported with the wool yet on them, and as this wool is valuable, the leather-manufacturer carefully removes this before the operations on the pelt commence. The wool is of a quality which would be greatly injured by the contact of lime; and therefore a kind of natural fermentation is brought about as a means of loosening the wool from the pelt. One of the buildings presents, on the

ground-floor, a flight of stone steps leading down to a range of subterranean vaults, or close-rooms, into which the lamb-skins are introduced, in a wet state, after having been steeped in water, "broken" on the flesh side, and drained. The temperature of these rooms is nearly the same all the year round, a result obtained by having them excluded as much as possible from the variations of external temperature; and the result is that the skins undergo a kind of putrefactive or fermenting process, by which the wool becomes loosened from the pelt. During this chymical change, ammonia is evolved in great abundance: the odor is strong and disagreeable; a lighted candle, if introduced, would be instantly extinguished, and injurious effects would be experienced by a person remaining long in one of the rooms. Each room is about ten feet square, and is provided with rails and bars whereon to hang the lamb-skins. The doors from all the rooms open into one common passage or vault, and are kept close except when the skins are inspected. It is a point of much nicety to determine when the fermentation has proceeded to such an extent as to loosen the wool from the pelt; for if it be allowed to proceed beyond that stage, the pelt itself would become injured.

When the fermentation is completed, generally in about five days, the skins are removed to a beam and there "slimed," that is, scraped on the flesh side to remove a slimy substance which exudes from the pores. The wool is then taken off, cleaned, and sold to the hatters for making the bodies of common hats. The stripped pelts are steeped in lime-water for about a week, to "kill" the grease, and are next "fleshed" on the beam. After being placed in a "drench" or solution of sour bran, for some days, to remove the lime and open the pores, the skins are alumed and subjected to nearly the same processes as the true kid-skins. These Mediterranean lamb-skins do not in general measure more than about twenty inches by twelve; and each one furnishes leather for two pairs of small gloves. These kinds of leather generally leave the leather-dresser in a white state; but undergo a process of dying, softening, "striking," &c., before being cut up into gloves.

There are a few other kinds of skins prepared by aluming, but the general routine of processes is pretty much the same as herein described.

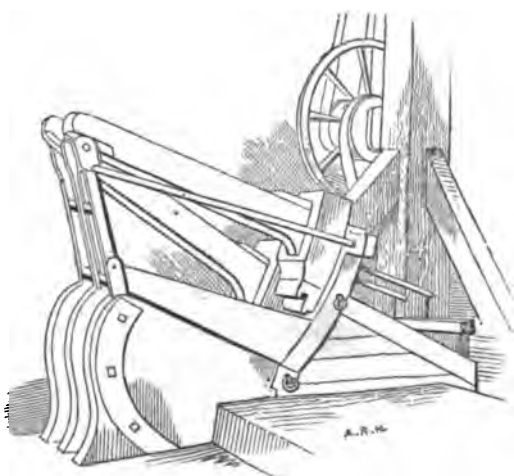
4. *Leather prepared with oil.*—The "killing" of the animal quality of skins whereby the skins are converted into leather, seems to consist in forcing out from the pores some albuminous substance, and replacing it with a substance of another kind. Thus in tanning hides, the tannin penetrates into the substance of the skin and combines therewith; in sumaching, the larger portion of the sumach does the same thing; so do the alum, salt, egg, and meal, in tawed leather; and lastly, so does the oil in the kind of leather now to be noticed.

That variety of leather called chamois, which is the characteristic of oil-leathers generally, was originally a beautifully soft leather prepared from the skin of the chamois goat. A similar mode of manufacture is now adopted for sheep and other skins, but the name of chamois, modified in the spelling to

a strange degree, is still applied to the leather produced.

The chamois leather, whether of the superior kind just alluded to, or of that more humble description known as "wash-leather," is prepared nearly as follows: The deer and sheep skins undergo the earlier stages of preparation nearly in the same manner as for other kinds of leather, such as washing, liming, beaming, &c. It must be remarked, however, that the inferior or thinner kinds are generally made of split skins, the more irregular of the two halves, generally the flesh side, being used for this purpose; the other half being alumed or tawed for "skiver" leather. In general, oil-leathers have the "grain" surface of the skin entirely removed before any oil is applied; as this removal not only affords a much softer surface, but greatly increases the extensibility of the leather, which still remains sufficiently strong and elastic for the purposes to which it is applied. This "frizing" or removal of the grain, is effected either by the edge of a round knife or a rubber of pumice-stone.

The lime and other obstructions to the porosity of the skin having been removed by steeping in sour bran and water, the skins are wrung or pressed as dry as possible, and are then ready for the reception of the oil. This is forced into the pores in a curious manner.



Oil-Leather Fulling-Stocks.

In the establishment are two pairs of "fulling-stocks," such as are represented in the preceding cut, and somewhat resembling those used in the woollen manufacture. Each pair consists of two stocks, which may be likened to heavy wooden hammers; the head, covered with copper, being attached to a long beam or handle lying in an inclined position. Near the lower end of each a wheel revolves, by which each hammer is in turn lifted up and let fall again, through a space of about a foot. This they do in a kind of trough, so that any substances which may be placed in the bottom of the trough receive a blow from each stock every time it descends. The upper or handle end of each stock is so adjusted as to work on a pivot or axis.

Into the trough connected with these fulling-stocks the leather is placed; the stocks are set in action; and the leather is beaten alternately by one and the other until rendered as dry as possible. Cod-oil is then poured on the skins in the fulling-machine, and this is forcibly driven into the pores of the skins by another lengthened beating with the stocks. The trough is so formed in an arc or curve, that as the stocks beat the skins, the latter become turned gradually over and over, whereby every part of each is exposed to the operation. When the oil is beaten in, the skins are removed, shaken out flat, hung out in the air to dry, again put into the fulling-mill, supplied with fresh oil, and subjected to a renewed fulling with the stocks. Again and again is this repeated; oil being poured on the skins in small quantity, and then beaten into the pores by means of the stocks. This occurs as many as eight or nine times, oil being added each time, and well beaten in, until two or three gallons of oil have been imbibed by one hundred skins.

When the oil is thus forced into the heart of the skins, they are placed in large tubs, where they undergo a kind of fermenting process, by which a more intimate action of the oil upon the fibres seems to be induced. These tubs are placed in one of the lower buildings near the fulling-stocks; and from them the skins, now converted into chamois leather, are removed, to be immersed in a weak solution of potash. This latter process is intended to remove whatever excess of oil may have remained in the leather. After being hung up to dry in the open air, the leather is finished.

CURIOUS FACTS.—The mite makes 500 steps in a second, or 30,000 in a minute. Allowing the horse to move at an equal ratio, he would perform 1,022 miles an hour. The journey from London to Birmingham would occupy but six minutes and a fraction. There is another insect which may, in some measure, rival the above in celerity of its motion, and itself unrivalled in strength in proportion to its size. Although it is generally disliked, and has not a very fair reputation, yet to the eye of the naturalist it is rather a pleasing and interesting object. Its form, as examined by his microscope, is extremely elegant, and has an appearance as if clad in a coat of mail. It has a small head with large eyes, a clean and bright body, beset at each segment with numerous sharp and shining bristles. All its motions indicate agility and sprightliness, and its muscular power so extraordinary, as justly to excite our astonishment; indeed we know no other animal whose strength can be put in competition with (its name must come out at last) that of a common flea; for, on a moderate computation, it can leap to a distance of 200 times the length of its own body. A flea will drag after it a chain 100 times heavier than itself, and will eat ten times its own weight of provisions in a day. Mr. Doverich, an ingenious watchmaker, who, some years ago, lived in the Strand, London, exhibited to the public a little ivory chaise with four wheels, and all its proper apparatus, and a man sitting on the box,

all of which were drawn by a single flea. He made a small landau, which opened and shut by springs, and with six horses harnessed to it, a coachman sitting on the box, and a dog sitting between his legs, four persons in the carriage, two footmen behind it, and a postillion riding on one of the fore horses, which was also easily drawn along by a flea. He likewise had a chain of brass, about two inches long, containing 200 links with a hook at one end, and a padlock and key at the other, which the flea drew very nimbly along. Something of the same kind is now exhibiting in London.

OBEDIENCE TO PARENTS.—It has sometimes been said that disobedience to parents is the beginning of all crime. If this is true—and to a great extent it undoubtedly is—how important that the habit of disobedience should never be formed! Beware, young reader, how you disobey the slightest command of your parents; for it will lead you to disobey others, and then to disobey the laws of your country and the laws of God.

Is it too much to require that you should obey your parents? Surely it is not; "for this is right." Is obedience hard? Then it is because it is not cheerfully rendered. It was not hard for Martin Luther to obey; for he could say, "I had rather obey than work miracles." You can do nothing that will please and honor your parents more than cheerful but implicit obedience.

But obedience must be *prompt* and *cheerful*, or it ceases to be a virtue. He who always obeys with a sour countenance and angry words, is brother to the openly disobedient.

The case of Louis, Duke of Burgundy, presents a striking pattern of filial obedience. When a child, no threat or punishment was ever necessary to make him obey; for a word or even a look was sufficient. He was always much grieved when his mother seemed displeased with him, or spoke to him less kindly than usual. On such occasions, he would often weep, and say to her, "Dear mother, pray be not angry with me; I will do what you please." Happy the parent who has such a child as Louis, Duke of Burgundy.

TO BLOSSOMS.

BY ROBERT HERRICK. BORN IN 1591.

FAIR pledges of a fruitful tree,
Why do ye fall so fast?
Your date is not so past,
But you may stay yet here awhile,
To blush and gently smile,
And go at last.

What! were ye born to be
An hour or half's delight,
And so to bid good night?
'T was pity Nature brought you forth
Merely to show your worth,
And lose you quite.

But you are lovely leaves, where we
May read, how soon things have
Their end, though ne'er so brave;
And after they have shown their pride
Like you awhile, they glide
Into the grave.



BURKE AND HIS LOCALITIES.—In the centre a portrait of Burke, from the picture by G. Romney. At top, Westminster Hall fitted up for the trial of Warren Hastings, painted by Edward Dayes. Burke is addressing the House, and stands at the bar to the left. At bottom, Beaconsfield House, Burke's country residence; and Beaconsfield Church, in which he was buried.

LOCAL MEMORIES OF GREAT MEN.

BURKE.

IN reviewing the early associations of the life of this eminent man, one can not but think that Nature had intended him to have achieved his reputation in the pleasant fields of poesy, rather than in the turbulent arena of politics; for not only was he related by the mother's side to one of England's greatest poets, whose Christian name he bore, but being removed at an early age from Dublin, where he was born in 1730, he was

left to spend some of the sweetest years of his life at Castle Roche, in the immediate neighborhood of the old castle of Kilcolman, the residence of that great relative during the period of the composition of the "Fairy Queen," and in the very midst of the lovely scenes which that poem, by its scarcely less lovely descriptions, has made familiar to the world. And deep and permanent, undoubtedly, were the effects of these associations on his youthful mind; witness his early poetical attempts, some of which exhibit more than ordinary ability. But, above all, we owe to those associations, most probably, that deep and

powerful current of poetical thought and emotion which, in after-life, so characterized all his speeches and writing. To this period and to those scenes, with all their memories and traditions, Burke ever delighted to refer; and among the poetical compositions to which we have alluded was, according to his biographer Mr. Prior, some beautiful verses upon one of the most charming of the localities around Castle Roche, the river Black-water, which receives in its course the Molla or Mulla stream, well known to the readers of Spenser. These verses are lost, unfortunately; but we still possess one of his very earliest compositions, a translation of Virgil's second Georgic, written in his sixteenth year. We transcribe a few lines of this poem, which will give our readers a tolerably good idea of the style and spirit of the whole:—

"Oh! happy swains! did they know how to prize
The many blessings rural life supplies;
Where, in safe huts, from clattering arms afar,
The pomp of cities, and the din of war,
Indulgent earth, to pay his laboring hand,
Pours in his arms the blessings of the land;
Calm through the valleys flows along his life,
He knows no anger, as he knows no strife,
What, though no marble portals, rooms of state,
Vomit the cringing torrent from his gate;
Though no proud purple hang his stately halls,
Nor lives the breathing brass along his walls:
Though the sheep clothe him without color's aid,
Nor seeks he foreign luxury from trade;
Yet peace and honesty adorn his days
With rural riches and a life of ease."

From Castle Roche, where he received the rudiments of his education (the ruins of the school-room used to be, and perhaps still are pointed out to visitors), Burke went to Ballytore, in the county of Kildare, a village agreeably situated in the valley through which runs the river Griese, about twenty-three miles south of Dublin. The site of Ballytore was purchased soon after the commencement of the last century by two members of the Society of Friends, John Barcroft and Amos Strettel, for the purpose of founding a colony of persons of that persuasion. It was soon determined that a school of a very superior kind should be established here; and an able and honest member, Abraham Shackleton, was brought from Yorkshire to superintend its foundation and subsequent operations. The reputation of the new school soon spread throughout Ireland, and from that time to the present day has made Ballytore an object of interest. The granddaughter of Abraham Shackleton was Mrs. Mary Leadbeater, whose poems and other works have made her favorably known to the public. Burke was in his twelfth year when he entered Ballytore. In a debate in parliament on a proposal that no Papist should be permitted to educate a Protestant, Burke referred very effectively to his own personal history at Ballytore school, expressing at the same time in his happiest manner his gratitude to its master. "I have been educated," he said, "as a Protestant of the Church of England, by a dissenter, who was an honor to his sect, though that sect was one of the purest." With Richard Shackleton, the son of the founder, Burke formed a close and continuous friendship: the family still possess a series of letters written by him to Richard Shackleton from the age of fifteen, when he

left Ballytore, up to within two months only of his death. No wonder then that this place was, ever afterward, greatly endeared to Burke; that one of his most cherished pleasures during the turmoil of political strife was an occasional visit to this "happy valley" of his youth.

He now (1744) entered Trinity College, Dublin, and began to study for degrees, relieving its tedium by joining in the chief sports, intellectual or otherwise, of his fellow-collegians. Thus we find him one of that body of students who took so active a part in supporting Sheridan (the father of the author of the "School for Scandal"), then manager of the Dublin theatre, in the theatrical riots of 1746, when the house was nearly destroyed, and its owner driven from the Irish stage. We find him also a member of a literary club established in Dublin in 1747, acting sometimes as its secretary, sometimes as its president. An extract from the original minutes of this association give us an interesting glimpse of the future orator: "Friday, June 5, 1747, Mr. Burke being ordered to speak the speech of Moloch (from the 'Paradise Lost'), receives applause for the delivery, it being in character." He attended also the meetings of the Historical Society, which was formed about this period, and became very famous. Many of Ireland's most distinguished men of the last century exhibited their talents here for the first time in public. It existed so late as 1815, when it was put down by the heads of the college, on account, it is supposed, of its attention to politics. In Dublin, Burke wrote the poems we have referred to, and commenced his well-known work, the "Essay on the Origin of our Ideas of the Sublime and Beautiful." Having been previously enrolled as a member of the Middle Temple, London, he removed thither from Dublin in 1750, in order to keep his terms. But literature and politics soon began to occupy his mind, to the entire exclusion of law, though not to the exclusion of those social enjoyments which became still more attractive in London than in Dublin, as bringing him into contact with more important men. The Grecian coffee-house was at first a favorite place of resort; where he became acquainted with Murphy, a dramatist and law student, by whom perhaps he was introduced to Macklin and Garrick. Some years later, when his own reputation was established by the publication of the "Essay," we find him one of the principal members of the Literary Club established by Johnson, and including, among its other members, Sir Joshua Reynolds and Goldsmith.

During the period of Burke's London life, and prior to his entrance into parliament, he suffered much from ill-health, and on more than one occasion visited Bath and Bristol with a view to recovery. On the recurrence of his malady, in 1757, Dr. Nugent, a fellow-countryman, a skilful physician, and a most amiable man, invited Burke to his house. Here he wooed, not health only, but a bride, Miss Nugent, the daughter of his kind host. They were married, and happily married. Burke used to say "every care vanished the moment he entered under his own roof." On one of the anniversaries of the marriage-day, he surprised her with a piece of prose—

poetry descriptive of his idea of a perfect wife, and which was headed—"The Character of———." His grateful and happy wife could be at no loss to fill up the blank.

In 1761, Burke commenced his public life as assistant to Mr. Hamilton, commonly called Single-speech Hamilton, who had been appointed secretary to the lord-lieutenant of Ireland, and whom he accompanied to that country. Here Mr. and Mrs. Shackleton called on him one day at his apartments in the Castle, and, to their great enjoyment, found him on the carpet romping with his two boys. It is pleasant to find how much of this playful simple spirit will exist in the minds of men where one would least expect to meet with it—in statesmen, whose failing frames and premature gray hairs too often attest the severity of their intellectual and bodily labors; and it is not unworthy of notice, that the higher and truer the genius of the men, the more keen is the zest for innocent relaxations. Some years after the period just referred to, a gentleman wandering toward Harrow came suddenly upon an interesting scene. On the green in the front of a small cottage was its owner, Richard Brinsley Sheridan, surrounded by Fox, Burke, Lords John Townshend and William Russell, &c., all busily diverting themselves in the simplest manner. Among them Burke was the most conspicuous; he was rapidly wheeling round the green one of Sheridan's boys in a small chaise, and it would be difficult to say which of the two enjoyed it the most.

Burke entered parliament on the 14th of January, 1766, having been previously appointed private secretary to the new premier, the Marquis of Rockingham; and but a short time elapsed before he was looked upon as one of its most distinguished members. The greatest event in his political life, so far at least as concerns the display of his own wonderful powers and the estimation in which he was held, was the trial of Warren Hastings. Westminster Hall presented on this occasion a most august scene. The king, with the prelates and the peers of parliament, sat on the judgment-seat. The Commons stood at the bar, headed by Burke, whom they had chosen to guide the prosecution. All the great functionaries of the state were present in their robes and insignia of office. And the accused—as the governor of sixty millions of people, and of a territory as large as Europe—was not unworthy of all this solemn splendor. The trial really commenced on the 15th of February, 1788, two days having been spent in mere preliminaries. Then Burke rose, saying, "he stood forth at the command of the Commons of Great Britain as the accuser of Warren Hastings." He then paused for above a minute, before he commenced the first of that most magnificent series of addresses which electrified alike the judges, the accused, and the spectators, and which in particular parts, where for instance he was describing some of the atrocities perpetrated by Debi Sing, an alleged agent of Warren Hastings, excited the feelings of his auditors to a pitch that we, coldly reading the accounts, can scarcely credit, and so overpowered himself, that the Prince of Wales, for the relief of all parties, moved the adjournment of the House. Had not the trial been

allowed to proceed so slowly (above seven years elapsed before it was brought to a conclusion), Warren Hastings could scarcely have escaped a conviction, so tremendous was the effect of these invectives. Pass we now to the last scene of all, Burke's favorite residence, the place where he loved to live, and to which he came contentedly to die.

Beaconsfield is in the county of Berkshire, about twenty-three miles from London. The manor, we believe, still belongs to the descendants of the poet Waller, whose estate it was, and to whose memory there is a monument in the churchyard. Gregories, the seat of Burke, was purchased by him at an expense of about £20,000, the Marquis of Rockingham assisting him to complete the payment. The name of Butler's Court seems to have been given by Burke to the mansion. Here it was that Burke brought Crabbe, then a young man, whom he had relieved from the most absolute destitution in the metropolis, with no other recommendations than a letter, certainly one of the most pathetic ever written, and some poems, which to Burke foreshadowed the reputation of the author of the "Borough." Nor did he rest here; as he had already, by obtaining a publisher for the poems, secured Crabbe's reputation, he now sought to fix his pecuniary fortunes on an equally solid basis. He succeeded in introducing the young poet into the church, and then in sending him back to his native place—him, the poor fisherman's boy—with the appointment of curate: an earnest merely of the higher preferment that awaited him. But a few months elapsed before he was appointed domestic chaplain to the Duke of Rutland, through the good offices of his in every sense great benefactor. In 1794 twice did the family grave open at Beaconsfield church—once for Burke's brother, and once for his only remaining son, Richard. Burke himself should then have died. It was a blow that utterly overwhelmed him. "*I am alone*," said he, in one of his letters; "*I have none to meet my enemies in the gate*." He had hitherto much enjoyed the beautiful scenery of the neighborhood, he had also taken much interest in farming operations. But all this was now at an end, he could not henceforward bear the sight of the place which seemed to have robbed him of his son. A dreadful change took place in his appearance. Three years after, Beaconsfield appeared to him under a different aspect, but he came then to join that beloved son; he expressly said in one of his letters, that he was going thither to die. Even the very day seemed to be known to him; for, some hours before his death, he busied himself in sending messages of affectionate remembrance to absent friends, in declaring his forgiveness of all who had in any manner injured him, and desiring a similar forgiveness for himself. He then again reviewed the motives of his conduct in various public emergencies, expressed his thoughts on the then alarming state of the country, gave some private directions concerning his decease, and lastly, his entire business with the world being concluded, caused some of Addison's papers on the immortality of the soul to be read to him. He was thus engaged when the dread shadow passed over him; after a brief struggle, he expired. Six days after, he was buried in Beaconsfield churchyard. Seldom

has funeral been more magnificently attended. In his will be desired that no other memorial of him should be provided than a simple inscription on the flag-stone, or on a tablet to be erected on the wall of the sacred building. Such a tablet accordingly we find, and on it is inscribed, "Near this place lies interred all that was mortal of the Right Honorable Edmund Burke, who died on the 9th July, 1797, aged 68 years." Mrs. Burke long survived him, continuing to reside here till her death in 1812. Some time prior to this she sold the estate for 38,500*l.*, reserving its use for life. In the year following the house was accidentally burnt to the ground. We can not better conclude this paper than by a character of its object, which, though brief and in a shape not generally considered the most fitting for a summary of a great statesman's life, remains to this hour unequalled for its truth and comprehensiveness, as well as for its wit :

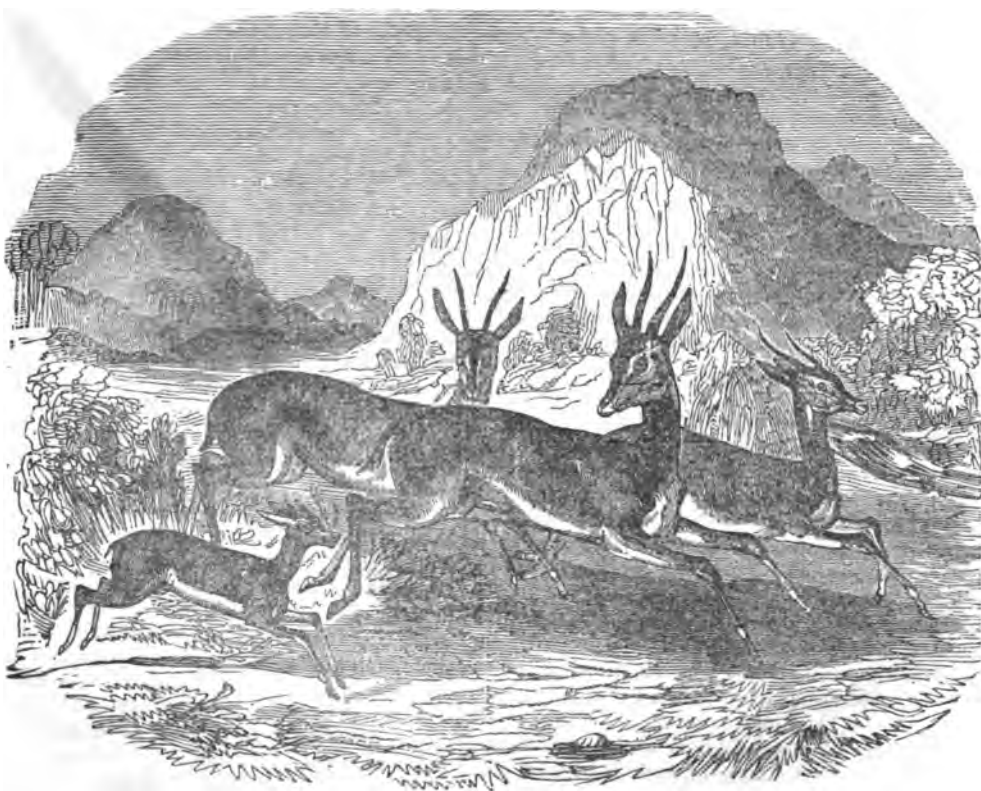
"Here lies our good Edmund, whose genius was such,
We scarcely can praise it or blame it too much ;
Who, born for the universe, narrow'd his mind,
And to party gave up what was meant for mankind.
Though fraught with all learning, yet straining his throat
To persuade Tommy Townshend to lend him a vote ;
Who, too deep for his hearers, still went on refusing,
And thought of convincing, while they thought of dining ;
Though equal to all things, for all things unfit,
Too nice for a statesman, too proud for a wit ;
For a patriot, too cool ; for a drudge, disobedient ;
And too fond of the right, to pursue the expedient :
In short, 'twas his fate unemploy'd or in place, sir,
To eat mutton cold, and cut blocks with a razor."

THE HART.

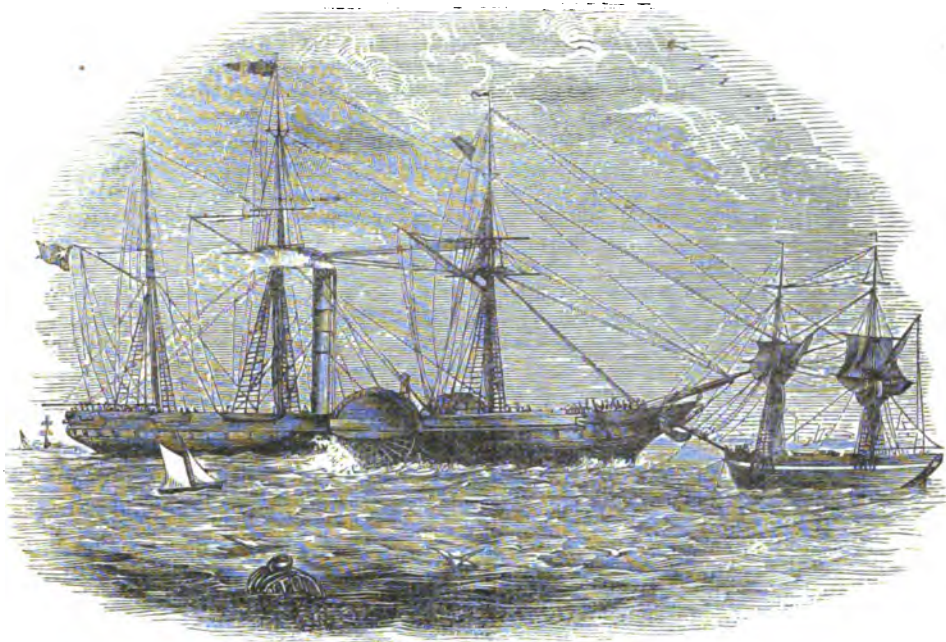
"THE hart, naturally of a hot and arid constitution, suffers much from thirst in oriental regions. He therefore seeks the fountain or the stream with intense desire, particularly when his natural thirst has been aggravated by the pursuit of the hunter. Panting and braying with eagerness he precipitates himself into the river, that he may quench at once the burning fever which consumes his vitals in its cooling waters."—*Bochart, in Paxton*, vol. ii., p. 167.

Such animals also suffer much, and pant painfully for water, when they have been chased from their favorite haunts in the waterless plains by the fiercer inmates of the forest or the glade, and are afraid to return to the water lest they should again be molested. And when the unconquerable wants of nature compel them at last to venture, or when they discover some other source from which they may be gratified, the intense and panting eagerness which they exhibit, furnishes a beautiful verification of the comparison employed by David in the forty-second Psalm.

We agree with Dr. Shaw in thinking that the word rendered "hart" and "hind," in the Scripture, is a general name for all or any animals of the antelope kind. From a recent publication we are enabled to furnish an appropriate pictorial group of these graceful creatures, from which the poetry of Western Asia (including probably that of the Hebrews) has borrowed some of its most beautiful comparisons and images.



HART (*Antilope Arabica*), Male, Females, and Young.



British Queen Steamship.

STEAM NAVIGATION.

BY ROBERT SEARS.

OUR own country and England have kept far ahead of all other countries in the energy with which they have availed themselves of the advantages of STEAM NAVIGATION. The alliance of steam with the press, the ship, and the railway-carriage, is a power which has only been introduced into the world within the recollection of the present generation. Can there be a doubt of the vast influence which this triple connexion must exercise upon the future destinies of mankind? or is there a more magnificent subject for speculation than the triumphs of civilization and knowledge which will be the result of this confederation of the highest elements of social progress—knowledge, commerce, and the facilities of intercourse—over all the kingdoms of the earth? Is a barbarous country like Africa to be won from the moral darkness which overshadows its vast surface—what more potent agent for effecting this object than the steamship which carries the white man into the heart of the country, and renders the great rivers by which he penetrates the tributaries of religion, peace, and commerce? In a country whose inhabitants have already conquered the physical difficulties of the soil, and who have rendered every part of it fertile and pleasant, who already acknowledge the advantages of law and order, but whose intellectual faculties are benumbed by some blighting influence, there may the steam-press be set to work to awaken them from their torpor and to impart higher views of the intellectual dignity of man. To such a country as America the railway steam-carriage will afford advantages not less important in the circumstances

in which she is placed. Every railroad which renders the chain of rapid intercommunication more complete and extensive, adds, we may hope, so much power to the force of TRUTH, and the consequent extinction of error, and leads the way to a higher moral and physical condition of the community.

The first efficient steam-vessel was launched on the Hudson, by Fulton, in 1807; and in Great Britain it was not until 1812 that Henry Bell's little steamboat of three-horse power began to ply on the Clyde between Glasgow and Greenock. In 1814 there were not a dozen steam-vessels in the United Kingdom. Now they are to be found within the waters of every civilized part of the world, and swarming on almost every navigable river throughout the vast American continent. Commercial intercourse is extensively carried on by their means on the coasts and countries bordering the Irish channel, the German ocean, the Adriatic, the Mediterranean, the Black sea, and the Baltic; and an increasing trade and traffic are occasioned by the certainty and speed with which they are navigated on these seas, as well as on all the great European rivers, the Rhine, the Elbe, the Danube, the Thames, the Humber, the Mersey, and the Severn. They have effected perhaps greater results in Ireland than any legislative measures which have ever been enacted in connexion with that country. It is scarcely sixteen years since the first vessel carrying merchandise plied across the Irish channel during winter; and two years ago the City of Dublin Company had a fleet of twenty-one first-rate sea-going steamers, propelled by engines of 5,550 aggregate horse-power.

In viewing the giant power of the steam-vessel, and the recent achievements it has accomplished, we

can not but feel a certain awe, mixed with admiration, in looking to the future changes which this great maritime agent may effect in the state of the world. The main object of the busy age in which we live is to shorten distance and to save time; for these purposes, hills are levelled and valleys filled up, canals dug, rivers spanned, and the steam-engine made in a thousand ways to supply the offices of human hands. From the most trivial improvement in the spoke of a wheel to the most gigantic project, all the efforts of human invention have this end more or less in view. Seconding this restlessly energetic spirit the steam-vessel has come forth upon the seas, a floating bridge, as it were, between remote lands, curtailing distance, and giving speed and certainty, where before time and safety were at the mercy of the winds.

In the spring of 1838, a new era commenced in the history of steam navigation, when the Great Western steamship and the Sirius made the passage across the Atlantic, the former from Bristol, in fifteen days, and the latter from Cork in nineteen days. It is true that a steam-vessel had crossed the Atlantic before, but the dependance upon steam-power was not complete in the instance of the Savannah, which made the voyage from New York to Liverpool in 1819, in twenty-six days. In 1828 also, the Curaçoa, an English-built vessel, with two engines, each of fifty horse-power, proceeded from Holland to the Dutch West Indies; and several years before the voyage of the Great Western, the Enterprise steamship made the voyage to India. These were but solitary efforts, and it is only since April, 1838, that the problem of steaming across the Atlantic has been practically settled, and become a permanent mode of transport. The mails from Falmouth to the Mediterranean had been regularly conveyed by steamships for seven or eight years before; but from the performance of these vessels it was assumed that no vessel could calculate upon making a voyage exceeding two thousand miles with any quantity of fuel which it could be made to carry; and notwithstanding the great improvements which had been constantly taking place in adapting steam-machinery to sea-going vessels, yet a permanent and profitable communication between New York and Great Britain was still deemed (in April, 1837), by many well-known men of science, as "in a high degree improbable." But the feats accomplished by the Sirius and the Great Western steamers have now fully determined the practicability so long doubted, of navigating the Atlantic seas by means of steam-vessels—no longer is it a matter of speculation; and in stating the fact, we can hardly divest ourselves of the feeling but that we are relating a fairy tale. In April, 1838, the Great Western left Bristol for New York, a distance of three thousand five hundred miles, and in fifteen days she landed her passengers in New York. The Sirius, which had sailed from Cork four days earlier, and was not expressly built for the voyage, arrived the same day. The whole population of the city was thrown into a state of excitement and enthusiasm, arising in no small degree from the emotions which connected this great triumph with the fact that it had been accomplished by men of the same ener-

getic race as themselves. This event will be dwelt upon with pride when the valley of the Mississippi and the prairies of the far west teem with millions of the great transatlantic Anglo-Saxon people.

At her departure from Bristol on her first voyage, the Great Western had on board six hundred and sixty tons of coal, of which only four hundred and fifty-two tons were used when she reached New York. In several of her subsequent voyages the average consumption of coal has been twenty-seven tons per day, and, allowing one hundred tons to each eight hundred miles, it would have been quite possible, with the two hundred tons remaining on her arrival at New York, to have proceeded sixteen hundred miles farther, thus making a voyage exceeding five thousand miles. One of the homeward voyages of this vessel has been made in twelve days and a half from New York to Bristol, a rate equal to eleven miles and two thirds of a mile per hour, or two hundred and eighty miles per day; and she has performed eight miles and three quarters with a gale directly ahead. The length of the voyage out and home may be estimated at from twenty-seven to thirty days. The average rate of our splendid sailing vessels called the "Liners," out and home, between New York and Liverpool, is forty days; the time occupied by one of the old line of packets averaging fifty-seven days. The British Queen (of which we have given a beautiful and correct representation at the head of this article), is another ocean steamer, built at a cost of about \$500,000. She was launched on the Queen's birth-day, May 23d, 1838, and made her first voyage from London to New York in 1839.

The British Government have made contracts for several large steamers, which convey the English mails, by allowing at first one half the expenses per annum, but recently we believe an arrangement was made with the proprietors for allowing the company the prodigious sum of £50,000 a year, or \$250,000, the former contract having proved inadequate to the actual expenses. Thus we may expect that in two or three years the most distant quarters of the globe will thus become intimately connected with the main sources and springs of civilization and enterprise.

The total number of steam-vessels in the world is probably about two thousand, and of this number four fifths belong to England and the United States. This power became of vast extent before time and experience could point out the laws which were necessary for its due regulation, and for guarding against those casualties peculiar to its nature. In addition to the ordinary perils of the sea, steam-vessels are exposed to the danger of explosion and the accidents arising from defective machinery, to fire, and to collision with other vessels. The time has, however, now arrived when the observation of a few simple regulations by steamboats should be compulsory on all persons connected with this class of vessels, by which means the loss of life would be no greater, nor perhaps so great as in ordinary sailing craft, over which they have in some measure an advantage, as in the power of keeping off a lee shore, on which the force of the winds would drive a sailing vessel.

From a report made to the London Board of

Trade, in 1839, it appears that in the preceding ten years the number of steamboat accidents in the United Kingdom, as far as their number could be ascertained, was ninety-two; namely, forty wrecked or foundered, involving a loss of three hundred and eight lives; twenty-three explosions of the boilers, by which seventy-seven lives were lost; seventeen fires from various causes, only two lives being lost; and twelve collisions, by which sixty-six persons perished. The loss of life in a crowded river, like the Thames, occasioned by steamboats, or which occurred on board, amounted to forty in three years: and the total loss of lives attributable to steamboats in the ten years, and including all parts of the United Kingdom, was six hundred and thirty-four. In the wreck of the *Rothsay Castle*, one hundred and nineteen persons perished; in one case of collision sixty-two, and in one of explosion twenty-four persons lost their lives. We need scarcely refer to the well-known fate of the *President*.

The want of experience, science, and attention, has occasioned still greater loss of life in the steamboats of the United States of America. In the report to Congress already quoted, it is stated that to the end of the year 1838, there had been ninety-nine cases of boilers exploding; twenty-eight of fire; fifty-two cases in which the loss of the vessel was occasioned by "snags" and "sawyers" in the rivers. The aggregate loss of life from these various causes was estimated at two thousand, and by many the number was thought to be much greater. The number of persons perishing in single casualties was also much greater than in England. In 1837 the *Monmouth* came into collision with another steamer on the Mississippi, when three hundred lives were lost. By the explosion of the *Oronoco*, on the same river, in the same year, one hundred and thirty lives were lost; again, in the same year, also on the Mississippi, the *Ben Sherrod* took fire, and nearly one hundred and thirty persons perished. In the same year also the *Home* was shipwrecked on the coast of Carolina, and one hundred lives were lost.

The adoption of even so simple a rule as that which is observed by carriages on the public highway would alone have prevented many accidents in both countries, and an inspection of the machinery by authorized persons would probably be a wise safeguard. There appears indeed to be no reason why steam-vessels should not be a safer means of water-transport than any other.

A new era has altogether come upon us; skill, science, and enterprise, have been called into activity by the inexhaustible wealth of England, "whose merchants are princes." The distant conceptions of *WATT*, and the predictions of *FULTON*, have been realized. The broad Atlantic wave has been advantageously navigated by steam! England and her eldest daughter have been brought within twelve days' sail of each other; time and space have alike been measurably annihilated—two great nations, descended from a common ancestry, speaking the same language, and having the same birth-right in the literature which adorns their annals, have had the bonds of national friendship and fraternal feeling more securely

fixed around them. It is impossible that any two independent nations can have such a community of interests as England and America. In truth, we know of no material and substantial interests in which they are opposed; nay, in which they are separated; their origin, their laws, and their language, are the same; their business, their prosperity, are identified. New York is but a suburb of Liverpool, or, if you will, Liverpool of New York. The failure of the Pennsylvania United States Bank has ruined more fortunes in England than in America; the manufactures of Manchester share more wealth with Carolina than with Middlesex. We are not merely brothers and cousins; the ties of consanguinity we know are not always the bond of friendship; but we are partners, joint tenants as it were, of the commerce of the world; and we have had, as we have just hinted, melancholy experience that distress on either shore hte Atlantic, must be almost equally felt on the other.

The experiment of STEAM NAVIGATION has now been fairly tried—the road laid open, and no one can tell the effects to be produced by its extension. When we have passed England, then are the great rivers of India open to steam, and who can tell the advances in civilization from its employment? The lust of power and military glory has over-ruled to promote national intercourse, and advance the interests of humanity; we have learned a better way to civilize than by vanquishing and oppressing our fellow-men. Commerce, and her sister, navigation, have done, and will do, far more than the sword to improve the world. But in those arts and enterprises, the ancients, who in some respects excelled us, were greatly our inferiors. They dreaded the waves of the Adriatic; and with ships, little better than canoes, scarcely ventured beyond the peaceful waters of the Mediterranean. The mariner's compass enabled Columbus to accomplish his grand discovery. The next great step was navigation by steam to the country which Columbus discovered; and thus man, who seems to be formed to inhabit only the solid land, uses fire to work the vast powers of machinery, launches with it into the bosom of the deep, sits secure amid elements which uncontrolled would destroy him, boldly copes with the billows of the ocean, and successfully struggles against its stormy winds. Does not this sway over the elements prove the vast superiority of MIND? "'Tis the Divinity that stirs within us," destined to surmount the material world, and to survive its ruins. Such power is not committed to us in vain; we would speak of it, not boastingly, but with the humility which it becomes feeble but honored instruments in the hands of the Great Ruler of the Universe, who by such means designs to effect his vast designs. WE ARE BOUND TO EMPLOY IT TO SPREAD KNOWLEDGE, CHRISTIANITY, CIVILIZATION, AND SO TO PROMOTE THE CREATURE'S HAPPINESS AND THE CREATOR'S GLORY.

The arrivals and departures of these leviathans of the deep—these eighth wonders of the world—have caused an excitement rarely ever before evinced both in the old continent and in the new. No one can look with any ordinary emotions on the future and present state of things effected by Atlantic steaming

The enormous steamer, the GREAT BRITAIN, was launched with all possible splendor at Bristol, England, on the 19th July, 1843. Every accommodation for the important ceremony was afforded, and numerous was the assembly of lords, ladies, and distinguished persons present to witness the ceremony. It was calculated, at the time, that upward of one hundred thousand persons occupied the surrounding heights, and that a more animating scene never presented itself at any former launch.

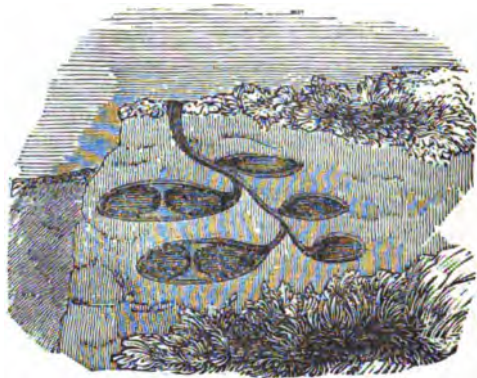
The Great Britain is indeed a wonderful achievement. She is 322 feet long (from 60 to 70 feet longer than the largest line-of-battle-ship), is 50 feet broad, and 32½ in depth. She has four decks, each carry 1,000 tons of merchandise, besides 1,200 tons of coals. Her boilers will be heated by 24 fires, and her funnel (which does not look large until you get close to it), is 24 feet in circumference. She has six masts, all of which can be lowered from the deck in case of heavy head winds, and her canvass covers about an acre and a half of ground—a pretty fair quantity of sail for a steamer. She is built in six compartments, so that it is calculated if she were to strike and carry away a dozen feet of her bottom, the uninjured compartments would render her sufficiently buoyant to float—a rather important consideration for passengers—besides which, being built of iron, she can not take fire. Fifteen hundred tons of iron have been used in constructing this monster! Her engines are of one thousand horse-power, and her average speed, it is calculated, will be twelve miles per hour—with a fair wind and sails set, much greater. She is without paddle-wheels, her mode of propulsion being the Archimedian screw—and this circumstance adds greatly to the anxiety with which her first trip is looked forward to by scientific men. Her consumption of coal is estimated at fifty tons per day. She will accommodate three hundred and sixty passengers, all of whom can sit down to the table at once, besides carrying about one hundred and thirty more persons as her crew. May she plough through the Atlantic surge, like a giant rejoicing in his course, engendering generous deeds and friendly feelings between the denizens of the old and the new world, to the mutual happiness and prosperity of both; and may the interests of the people of the two countries be as near to each other as their banners at her mast-head; and let us fondly and fervently desire that their best affections may be as closely entwined.

ANTS.

THE study of the ways of the ant, is calculated to furnish lessons of wisdom, revealing to us the wisdom of God as manifested in the humblest of his creatures, and furnishing important practical lessons, which the humbleness of the teacher should not lead us to despise, but to value the more highly.

Our wood-cuts show what only is capable of pictorial illustration—the skill, industry, and labor, with which the domicils of the different kinds of ants are constructed, and which, considered relatively to the

size and resources of the respective architects, far exceed many of those greatest results of human ingenuity and labor by which the world has been astonished. Whether as masons, carpenters, miners, or carvers of wood, they offer examples which the most ingenious need not refuse to admire, and by which the wisest may be instructed. In the various species of ants the constructions are various, and none unworthy of attention. The mason-ant offers



Section of a bank showing the Nests of the Mason-Ant.

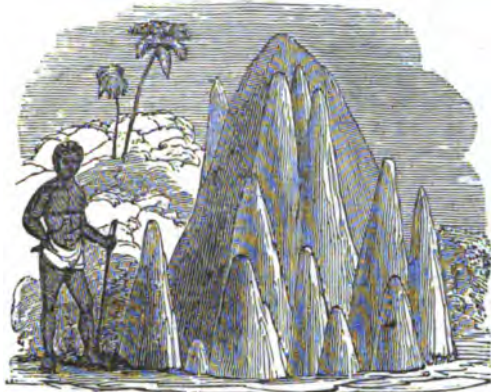
to our contemplation its earthen hillock, the interior of which exhibits a series of labyrinths, lodges, vaults, and galleries; its construction skilful, and its situation chosen with judgment. Such nests are sometimes constructed in twenty stories above and as many below the ground, by which arrangement the ants are enabled to regulate with great facility the heat, withdrawing to the underground apartments when those have become too warm, and proceeding upward when their lower rooms are too cold. With equal skill, and perhaps greater labor, do the carpenter-ants chisel their stories, chambers, galleries, and colonnades, in the bodies or roots of growing trees.



Nest of Termites in the branch of a tree.

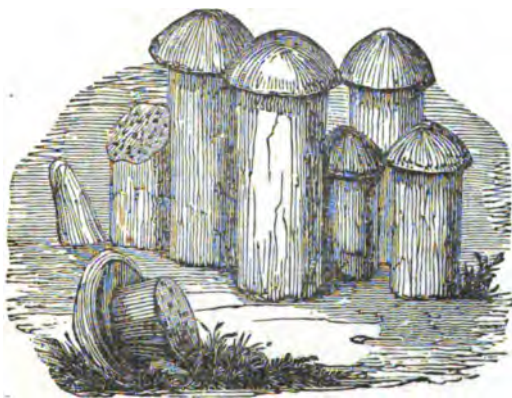
Then other species construct nests among or upon the branches of trees, various in their kinds and dimensions, but all wonderful instances of the results of the art and industry of co-operating numbers, even among creatures so small that myriads may be crushed unregarded beneath the foot. Some of these nests are as large as hogsheads; others from the size of a human head to a fist,—the latter being formed by the

powerful bending of large leaves, and gluing the points of them together so as to form a purse. "But when we look at the buildings erected by the white ants of tropical climates, all that we have been conveying dwindles into insignificance. Their industry appears greatly to surpass that of our ants and bees, and they are certainly more skilful in architectural contrivances. The elevation also of their edifices is



Pyramidal Nests of the Termites.

more than five hundred times the height of the builders. Were our houses built according to the same proportions, they would be twelve or fifteen times higher than the London Monument, and four or five times higher than the pyramids of Egypt, with corresponding dimensions in the basement of the edifice. These statements are perhaps necessary to impress upon the mind the extraordinary labors of ants, for we are all more or less sensible to the force of comparisons." The nests just mentioned are frequently twelve feet high, and some have been mentioned so high as twenty feet, and large enough to contain twelve men. This is an exterior shell containing an interior building, in which are formed a vast number of apartments, galleries, and magazines. In the same region also does the smaller white ant erect its strong pillar with its overhanging roof or capital, in



Turret-Nests of the White Ant.

the form of a mushroom. These erections are about three feet high, the interior being divided into numerous angular cells which furnish lodging to the indus-

trious little beings which construct this singular monument.

There is much that is worthy of admiration in these insects. Their unwearied industry and indomitable perseverance, the arduous and sincere exertions of every individual toward the common object, their regulated labor, the alacrity and zeal with which the over-burdened are assisted, their care in observing the times and seasons, the judgment with which they avail themselves of favorable circumstances, and the grand evidence which even these minute creatures are enabled to offer of the effects producible by the co-operation of numbers in a good and useful object,—are all circumstances which explain and enforce the injunction of the sacred writer: "Go to the ant, thou sluggard; consider her ways and be wise."

LISTENERS.

GOLDEN opinions are often to be gained by discreet silence. Some people delight exceedingly to hear themselves talk, but above all things are captivated with the respectful attention of a steady listener; and whoever has the patience to sit and hear them out (that is, not absolutely to wait until they stop of their own accord—for perhaps there is no well-authenticated instance of anything of that kind—but till something occurs to interrupt them), obtains their good-will far more certainly than if he had communicated to them a vast variety of important information, or taken a world of pains to correct their mistaken notions. A character for the most engaging modesty falls inevitably to the lot of him who possesses the power of holding his tongue; the praises of his discernment are everywhere sounded; nay, he often acquires a reputation for conversational abilities: it is true, with regard to this latter point, that doubts are sometimes expressed by some who have been whole nights in his company without hearing him utter more than a few syllables; but the interminable talker—the never-failing patron of silent gentlemen—forgetful of his own fame in his zeal for that of his client, declares that good talents for conversation do not consist in the multiplication of sentences, but in speaking succinctly to the purpose. Advantages more substantial than favorable regards do also frequently accrue to the possessor of this qualification; it were endless to recount how many large fortunes have been secured by persons, male and female, in the fifth, sixth, and seventh degrees of kin, who day after day for years had the fortitude to submit their ears to the recital of the same stories and remarks from an old invalid bachelor relation. And far be it from us to maintain that in this respect the effect did not most naturally and most justly follow the cause. People who have become rich in this manner enjoy indeed no high repute with the world; they are commonly reproached with having meanly subjected their minds for a number of years to a servile acquiescence with all the caprices of him whom they courted through no attachment to his person, but with the precarious expectation of coaxing from him a munificent legacy. This

no doubt is more or less the case. We believe, however, that, when two persons live long together, their intercourse for the most part assumes a kindlier character than that between a haughty lord and an obsequious dependant. The wants to which we daily administer beget in us pity for him who needs assistance—satisfaction with ourselves in being able to relieve them—and a degree of affection for the individual who thus engrosses so much of our care. Gratitude in the other party for dutiful services and increased comforts is a still stronger and more obvious bond of union. This is true, whether the services performed have regard to the case of a decayed body, or the amusement of a mind that can not find employment within itself. If single gentlemen who have made quarter-plums, half-plums, and plums, without cultivating elegant tastes, the exercise of which might relieve the weariness of an unoccupied old age, were to retire from the bustle of action or business, and to find nobody upon whom to bestow their garrulity, their days would be dreary and wretched in the extreme. Whoever, therefore, lightens the tedium of their afternoons confers upon them whatever happiness they enjoy, and they can not extend their liberality to any one who better deserves it.

Valuable listeners are seldom to be found of an advanced age. When people get established in life, and have amassed a share of substance and experience, they begin to feel their own weight—to think their opinions merit consideration as well as those of others, and that they are entitled to “deliver their sentiments at length on the subject.” As their wealth and wisdom are farther increased, what they say assumes the tone of incontrovertible maxims rather than that of persuasion or argument. By-and-by they can not bear to be contradicted, and in a little time longer you will hear it whispered that they have become intolerable prozers. This gradation is not in every instance true to the letter: multitudes of veterans retain the candor, the simplicity, and almost the vivacity of youth, to their latest years. But somehow or other a man of that period of life is never pitched upon as a person proper to receive the full details of a very long story, which in general can not be heard with a zest of attention and admiration sufficient to gratify the narrator, unless by the inexperience of the young, which “holds each strange tale devoutly true.”

Yet there is a method by means of which talkers frequently contrive to enlist auditors of any age; you have a piece of urgent business, and going to the person with whom it is to be transacted, lay the whole affair before him: it may be of equal importance to him, but perceiving of what consequence it is to you, and being a proser, he answers, “Well, well; we’ll talk of that presently: but did you hear of our famous dinner last night?” You in vain endeavor to get off by saying that you read a full account of the proceedings in the newspapers this morning; he protests there was never such a negligent or partial set as the reporters—they have omitted or misrepresented the whole of his speech: and he goes on mercilessly to inflict upon you the entire oration, from the—“Gentlemen, unacquainted as I am with public speaking,”

down to the resolution which he in vain attempted to persuade the “numerous and respectable company” to adopt; concluding with a supplementary address to yourself, to prove the ruinous consequences that must inevitably ensue from the rejection of his proposal. Having fully disburdened his mind upon you, notwithstanding your looks of agony, and the unsettled manner in which you occupy your chair, he then perhaps recurs to the matter in dependance between you and him, and you obtain a satisfactory arrangement, which would certainly have been postponed if you had been altogether refractory, and declined to hear the mighty matter with which his mind was laboring. I remember hearing the advice of a wine-merchant, in very extensive business, to his son, which is very much to the present purpose. It is very well known that many of the transactions of wholesale merchants with their country customers are managed by “travellers,” as they call themselves, or “bagmen,” as they are derisively termed by those whose wit is not too refined to prevent them from making a joke of a man’s profession. The sons of the merchants themselves are often employed in this manner, not only to give them a knowledge of every part of their profession, but to introduce them to a personal acquaintance with those who deal with “the house.” From a journey of this kind the young man alluded to had just returned; and his father asked him, among other things, “Well, Tom, and how much are we to send to my friend the provost.” “He did not favor me with an order,” replied Tom, evidently a little chagrined to confess his want of success in that quarter. “Did not favor you with an order!” exclaimed his father. “There must have been some very particular reason for that.” “Why,” was the answer, “when I told him our vintages, he would talk of nothing but provincial politics. The conduct of Deacon Farlane at the last election, he assured me, was perfectly infamous. I begged him to look over the catalogue, and select such supplies as he required. He begged to refer to me if it was not a most base thing in a man first to pledge himself to one party, and then to vote for the other; and went on to enumerate a host of his fellow-citizens who had been guilty of that delinquency. Perceiving there was no end to his vehemence, I informed him civilly, that, as I had a number of other calls to make, it would be obliging if he would honor me with any orders he had to give. ‘Very well, young man,’ he said ‘nothing is wanted at present; but give my respects to my old friend your father, who did not use to speak of making other calls the first night he came to my house.’ And so,” concluded Tom, “I took my leave.” “Tom, Tom!” said his father, on hearing this explanation, “I don’t know what you’ll make of the business when it comes into your hands; but if you wish to sell wine with success, you must be content to listen to a great deal that people have to say on other subjects; and if you do so respectfully, ten to one but they will take a larger quantity than they at first intended. It will not do to go about, and cry, ‘Wine, wine!’—how much shall we send you? I must set out to Sybo to-morrow, and keep the worthy provost a customer of the house, as long at least as I am a partner in it.”

THE RUINS OF ANCIENT CITIES.—No. II.

"I have seen the walls of Balclutha, but they were desolate. The fire had resounded in the halls, and the voice of the people is heard no more; the stream of Clutha was removed from its place by the fall of the walls; the thistle shook there its lonely head, the moss whistled to the wind, the fox looked out of the windows, the rank grass of the wall waved round its head,—desolate is the dwelling of Molina, silence is in the house of her fathers; raise the song of mourning, oh bards, over the land of strangers! They have but fallen before us, for one day we must fall. Why dost thou build the hall, son of the winged days? thou lookest from thy towers to-day; yet a few years and the blast of the desert comes, it howls in thy empty court and whistles round thy half-worn shield; and let the blast of the desert come, we shall be renowned in our day. Raise the song, send round the shell, let joy be heard in my hall, when thou son of heaven shalt fail, if thou shalt fail thou mighty light, our fame shall survive thy beams."—*OSSEAN*.

RUINS! there is something in the word, even without the spectacle, which awes the spirit and kindles the intellect—a pile where the artist called forth all the skill and ingenuity of a dormant immortality has fallen! there was a time when, bright in the majesty of its finished splendor, it rose to court the sunbeam and to avert the storm,—is it a temple? there was a day when the chant rose high and loud on its consecration, and the white-stoled priest called the fire from heaven to bless the sacrifice,—is it a senate? there was a day when it rung with the thunder of applause, and the fires of eloquence burned brightly in its midst; but now in ruins, the ivy and the lichen, and the wallflower, wreath it with a grave-like beauty, every wind wakes for it a mournful requiem, and each column and architrave tell in their melancholy appearance how rapidly they are passing to dust.

Now such are some of the lessons—and there are none more affecting—than those which time teaches to man by his silent and imperceptible march, by the mighty and effective changes which are transpiring from the touch of his finger, and the wide sweep of his scythe. These ruins tell us of change, mighty change, existing all around us, stamped visibly on every object. History tells us of the ravages of conquerors, she points to the remnants of shattered glory and faded powers, she tells us what the sword has done—but far more impressive is the lesson conveyed to the mind in that ruined shrine, once burning with religious fire, something far more eloquent in the hootings of the bird of night in that trembling tower round which in the days of its grandeur and its pride the eagle did not disdain to wheel its flight, and the creeping ivy as it steals over the gray ruin and the proud Gothic pile has a pathos and a power which appeal yet more to the sense than the classic verbiage of the best historian and the immortal strains of the first of poets,—they tell of the desolation and the ruin which, as a ploughshare, pass over the earth—they tell of the various stages of society which gradually rise and flourish; and as they meet the eye in their impressive loveliness, they speak of

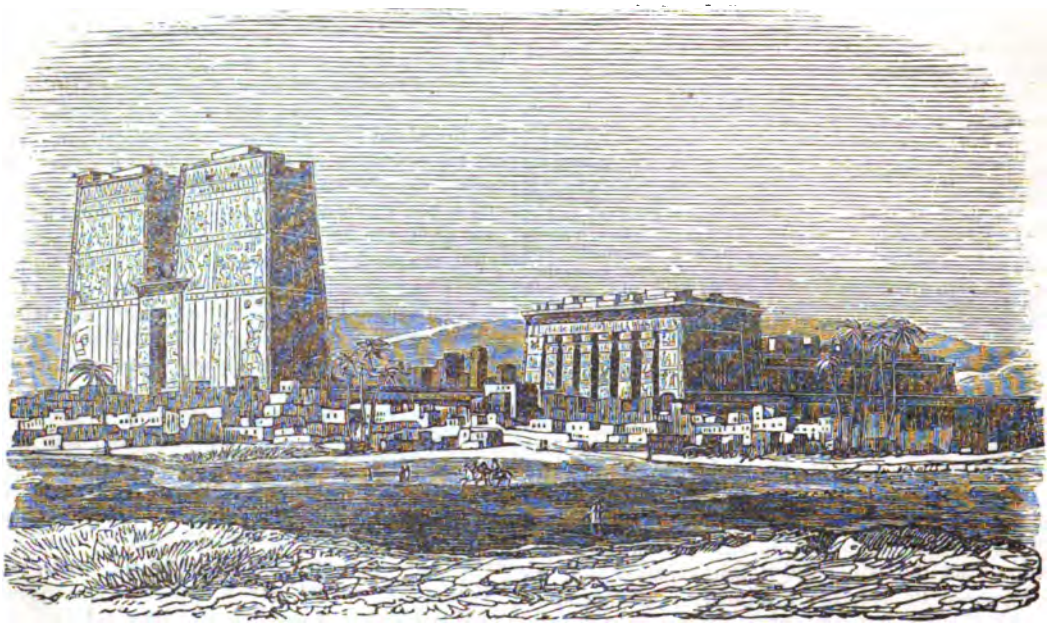
"Time the beautifier of the dead, restorer of the ruin."

But ruins!—why what is our world but one vast Carthage, and what are we who inhabit it, but the Marius, sitting amid the evidences of its decay! Again we refer to history, and lay our hands upon Herodotus or Diodorus Siculus, they tell us of stupendous piles all glorious as the hand of the most

sublime Artist could make them; and they speak of buildings whose domes courted heaven and drank in the golden flood of living light from the sky; they tell us of oracles, but they give forth no response; of temples, but they ring with no chant; of the palace, but the shout of revelry is hushed there; of the hall, but the warrior's voice hath not left an echo. Yet a hollow sound comes from the chambers of the grave, and it peals over the cromlech stone, and the triumphal arch, the bust and the pillar, the frieze and the relief, the pillared obelisk and the proud sarcophagus, declaring "vanity of vanities!" The chart of time is before me—I stand amid the dateless tombs of thousands of years, the dynasties of all time rush on my vision. I turn a backward glance and I see all the world's mighty empires, they crowd on each other, each in his own sepulchral grandeur, the world's melancholy funeral procession; the sceptre is snapped, the throne is prostrate, the power is gone. Babylon is there—Babylon, whose Semiramis called forth its high and haughty splendor; Babylon, where Nitocris kindled the beamings of softer glory. We have read of its hundred gates of solid brass, its six hundred and seventy-six squares, its unimaginable walls eighty-seven feet broad and three hundred and fifty feet high, its magnificent bridges, its costly palaces, its subterranean glories, and its hanging gardens: its fifty streets, each fifteen miles long and one hundred and fifty feet broad, its Temple of Belus six hundred feet high, its eight towers, its golden image, and its observatory on the summit. It was here that the men, called from Chaldean plains, first watched the evolutions of the mighty planets which wheel through space, and formed imaginary figures in the sky; those stars still roll on, little reck they of change; but the scene on which they smiled is passed away; of all this primeval splendor scarce a single relic meets the eye,—the Arabian pitches now there his tent, the houses are full of doleful creatures, the wild beasts of the desert are there, there the satyrs hold their revels, and the pall of destruction envelops the whole.

Egypt! the land of science in all its branches, literature in all its ramifications, art in all its beauties, is changed. The Nile rolls onward still as it rolled in the days of Cheops, and Sesostris, and the haughty Rameses, and the lotus still hangs over their stream and beauty still walks in the sky,—but Egypt is changed; Hermopolis is changed, its temples exhibit marbled forms, and its architecture the richness and the beauty of an ancient hand; its winged globes are still there, and the stars still fret its ceiling—but they give forth no fire; and Apollonius Magna with its galleries and porticoes, and covered naves of entire rock; its colossal figures, its paintings and its hieroglyphics—Typhon has conquered Isis, the wreck proclaims it, and the temple is far more expressive of his dwelling than in the days of its glory and power.

But Thebes, O what a change is there! the lyre of Memnon is hushed, and his statue, once clothed in all the drapery of beauty, is mutilated; and its temple, where pomp and magnificence yet linger, exhibits likewise all the evidences of ruin and decay—where shall the eye repose in searching for some



Ruins of Egyptian Temples at Edfou.

temple that retains its former glory, some palace where the change has not been desolation? In her once sacred shrines, the battle scenes are still sculptured on the walls, and Osiris is still there, extending the sceptre of his protection over the heroes of the fight; but Osiris is a mangled figure, a type of the land where his rites were celebrated, the nation of which he was the tutelary deity. We approach the great Elasok of Luxor, we pass through chambers leading onward for eight hundred feet; all is ruins! we travel to Karnak, we pass the Cro-sphinx, and the sphinx and palaces shadowed with groves, like life in the midst of death,—we enter the temple of Isis, what a picture of naked desolation! The sphinx again meets your eye—ah! it was the emblem of the land, it is the emblem of the land still; it was couchant in the days of Egypt's grandeur because Egypt conquered it, it is couchant now; Egypt herself is conquered. Oh yes! in our imagination we stand within the temple, but not a trace of the former ceremonial of its magnificent worship meets our eye. There was a time when on this very spot the prince and the priest, the soldier and the citizen, came up to present their vows—now all is desolation, it is the silence of the grave; and yet the ivy is not there, nor the rank grass, nor the wild tree of the wilderness,—no vestige of vegetation, no remnant of life; the marble unblackened by time and storm, still shows its veins, it is a skeleton—the vast temple is a skeleton, beautiful in its own dismemberment. Oh, what must it have been in the age of its glory, the period of its loveliness, the zenith of its power! Oh, what must it have been in the age, when from far lands men came to imitate and admire! The Greek, the Roman, or the Lydian. Oh, what must it have been, when the painting now so beautiful received the first touch of the pencil, when those statues yet breathing with the life of art

first received the impression of the chisel! Those obelisks and colonnades, if now so stupendous and sublime, how must they have awed with their splendor, on the day when Sesostri's king-drawn chariot to gaze on their splendor, or when the haughty Pharaohs bent in adoration at those superstitious shrines! Other nations may be celebrated for the beauty of art, but the stupendous Egypt must ever stand paramount, her designs were august, her achievements colossal. Yet the hundred-gated city is in ruins, every trace of that wonder has passed away; such is the aspect of Egypt!

“Those ruins which seem cursed, and frown
As if some haunting ghost were there,
Where bravery scarce dare stay alone;
Oh what an awful page they are
Of passion's desolate career!
The very winds that whistle through,
Seem shuddering midst the gloomy pile;
There spectres meet and sigh awhile;
And as the screech-owls cry to-who, who,
The fiends of evil shrink and smile.”

It may perhaps with safety be said, that out of Egypt no monuments of antiquity are so intrinsically interesting as those of Persepolis.

“Those ruined shrines and towers which seem
The relics of a splendid dream;
Amid whose fairy loveliness,
Naught save the lap-wing's cry is heard,
Naught seen, save when the shadow fitting
Fast as the moon unsheaths her beam,
Some purple-winged sultana sitting
Upon a column motionless,
And glittering like an idol bird.”

We draw near them, and as from the plains beneath we catch a distant glimpse of the glorious remains of the palaces, we long to know who founded a building which in ancient days must have frowned in such proud majesty on the vales beneath. How uncertain a blast is that given by the trumpet of fame, how vain is the posthumous glory after which so many

aspire! Tradition itself is perplexed in accounting for their origin, and history drops over the subject the mantle of darkness, and retires from the investigation. The deeds of Jamshid are sculptured on the walls, and there is little doubt that Cyrus the Great was the same person, but authentic records there are none. I stand on the mountain, amid the grandest ruins, and I ask where stood the city? and I am told that none ever existed, so complete is the desolation, so entire the destruction around me. Oh yes, it existed! relics of its existence are thrown up with every spade of earth, though the eye meets with no trace of it above the ground. What a wreck, what a complete and solemn wreck is exhibited to the traveller in the ruins of "the Palace of Forty Pillars!" was this the seat of the majesty of Cyrus, was this the pavilion of Alexander's triumph? Yes: and its remains stand the memorial of his wantonness, hence

"Thais led the way
To light him to his prey,
And like another Helen fired another Troy."

Let us walk to the southern extremity of the eastern colonnade; an immense mound of ruins meets the eye, a pile of rubbish is beneath our feet, yet it is more than probable we are standing on the very spot where stood the banquetting chambers of the Macedonian monarch; those columns were the supporters of the palace which witnessed the madness of his revelry; the fire did not spread far, the monarch repentant ordered it to be extinguished; he spared the palace for a wider ruin, a more extensive decay; and there is every probability (circumstances confirm it) that it has remained from that day to this unaltered and untouched. What a solemn thrill runs through the frame when we look around us, and find ourselves in the midst of ruins untouched by human hands since the destruction of that night, three hundred and twenty-nine years before the birth of Christ. We have read the transporting history of Ferdousi, dressed in the bright and flowery mythos of the East, and its ancient glory is depicted there, not merely in the description, but in the style, for it must have been a glorious land which could have produced such a writer. It must have been a glorious land—and the trembling, tottering, fallen, prostrate fragments of its decay attest that ancient glory, and proclaim that pre-eminence. It must have been a glorious land, and every fluted figured column stretched on the sward proclaims it. The splendid allegories and descriptive processions which adorn its walls proclaim it. The costly tombs and sepulchres holding the venerable fathers of two thousand years proclaim it; the memorial of ancient glory lives in every stone, in every statue, in every tomb, ay, in every tomb—though Persepolis itself, alas! is but a tomb, with its columns, domes, and dead and lifeless things, which have escaped a burial—and though in its vaults it hold the ashes of Cyrus, those ashes only prove that the talisman of empire is not in dust, and that "all that's bright must fade."

Shall we linger amid the ruin of Palmyra—oh! why should we linger when time has so strongly set his wrinkles on the features of beauty. The temple of the sun! let us stay and admire, and bow before

that Power who first sent the globe of flame to light up our system, and mocking the superstition, struck with his thunders their shrine to the ground, and bade the sun pour his beams on a roofless sanctuary. Yet let us stay to admire those long piazzas amid which the pillars of Parian marble greet the vision, with their columns crowded with inscriptions, their capitals beautified with flowers. Yet let us stay and cast a glance at her sepulchres and mausoleums and tombs, for they stand in the proudest city, and outlive the proudest works of man's ingenuity, reminding us of death even in the midst of their triumphs;—and one thought of Solomon its founder, and one thought of Zenobia its more than queen, and the City of the Desert fades from our sight, like a bright star in the midst of a gloomy sky.

But we have not yet left the East—Balbec, rich and gorgeous as the sun she worshipped, hails our notice, and well does she deserve it.

"Her ruined columns stand sublime,
Flinging their shadows from on high;
Like dials which the wizard Time,
Had raised to count his age gone by."

A traveller has described it as "a grand ruin," and it is most emphatically "a grand ruin;" here Corinthian architecture has attained a transcendancy, its richness is unrivalled. Lamertine speaks of it as "marble lacework;" the stone, says he, "groans beneath the weight of its own luxuriance." Its rotundo, its temple, and its palace, with their sculptured eagles, their cornices and vaulted arches, at once charm and overawe; but the richness is too great, it does not impart feelings accordant with a ruin,—we may be satiated with wonder at the art, we are not lost with the solemnity of the scene.

But if a wanderer from some distant land—being similarly constituted to ourselves—from some far-off planet in space, with a refined and expanded intellect, were to visit our globe, when he had learned all the passages of its history, he would feel anxious beyond all other remains to view the ruins of Rome and Greece,—Rome, immortal and imperial Rome would hail his fond attention, and amid her ruins he would feel a new life, a new spirit, animating his frame—how would he wish to hail those blue and sunny skies, beneath which Virgil poured his immortal strains—how would he tread that forum where Cicero flashed the fires of eloquent and righteous indignation on Catiline; fascinating, enchanting, and appalling by the power of his tongue. With what eagerness would his footsteps seek that Temple of Liberty in which Rienzi swore to protect her in her last asylum. How ardently would his imagination greet the shores which boasted of the heroism of Regulus, the patriotism of Camillus, and the wisdom of Numa Pompilius: glorious and immortal Rome, over which old time has no power, because her fame rests not on the achievements of the sword, and mind had established an empire more lasting than the brittle basement of a throne,—hers was an empire of the feelings of humanity, and the high aspirations of an immortal destiny,—Alaric, and Attila, and Genseric, though they robbed Rome of its power, could not destroy its glory; they might have thrown a fire-

brand in every temple, and have made each august and glittering pile the contributor to its own destruction ; but those ashes would have risen to the wind, and they would have given to the wind a voice, and that voice would have spread through the universe, and the glory of Rome would have been immortal as it is to-day. Therefore, among her ruins, while I mourn over the decay, I joy over the triumph ; and while I see all that Time has done, all the prostration and all the wreck—I see, I feel that there is a something over which he has no power, an empire which is not destined for the tomb.

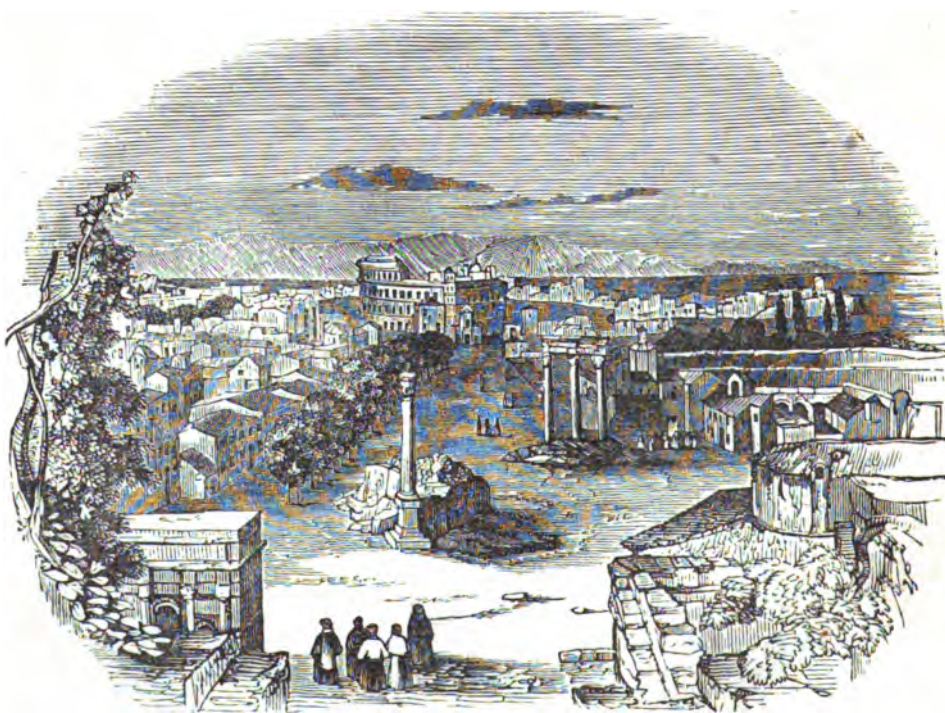
The ruins of Rome are threefold : there are the ruins of Ancient Rome, there are the ruins of the Middle Ages, and the ruins of Modern Rome,—and all are surrounded with a halo of immortality robed with light as with a garment. It may with truth be asserted that no nation has exhibited such a continued stream of lofty genius as Rome. In other cities we are compelled to institute a comparison between the achievements of genius in ancient and modern times, by which the modern generally suffers, but here all is classical. We feel that we are on no common spot of earth. The Colliseum—

“ That in its public days unpeopled Rome,
And had uncrowded nations in its womb—”

the Parthenon, the Arch of Constantine, and the columns of Trajan and Antoninus, are worthy of St. Peter's, and the mighty church of St. Peter's is worthy of them.

The space allotted for this article is almost filled, and yet we have not noticed the land which of all other commands attention ; for if Rome be glorious,

if the charm which haunts her ruins and lingers round the Tivoli or the Farnese, if the glory which hovers over the Seven-hilled city be a spirit ennobling and sublime, how much more brilliant is that which haunts the shores of Greece, how great the charm which rises like another Venus from the Cyclades, which hovers over the Thessalian Mountains, consecrates the Delphian Vales, reigns in the Morea, and breathes beautifully in Argos and Eleusis. No ! never, never, unless we may make a happy exception in favor of our own country ; never was there such a land ; nay, we can not, we dare not lay claim to such lightning-like genius as is theirs. Speak we of sculpture, Phidias was theirs ; of poetry, the first who fired the torch was theirs, the blind old master of song, whose harp-strings rung over the ruins of Troy ; speak we of oratory, Demosthenes was theirs—and never since have such breathing thoughts and burning words been known ; do we ask of painting ? Apelles, and Zeuxis, and Parrhasius, were theirs,—the men who deceived Nature by their powers ; speak we of figures, Euclid was theirs,—the man who proposed such problems that it has taken since then all ages to solve ; of philosophy, Socrates and Plato were theirs,—and the piety and the virtue of the one, and the bold and dreamy theories of the other, have called forth the admiration of all times ; and the father of historians was theirs ; and the first of rhetoricians was theirs ; and the prince of warriors was theirs ; and the purest of patriots, and the wisest of legislators, and the most beautiful of moralists, sprang from her soil. Oh, who would not wish to walk amid the ruins of Greece ! Ah, she is all ruins ! that word reminds us that



Ruins of the Forum —Rome.



View of Corinth.

"'Tis Greece, but living Greece no more,
So coldly sweet so deadly fair,
We start, for soul is wanting there."

Unlike Rome, she shows no monuments of a modern glory, no emblems of a present greatness, no promises of a future power; yet, where upon her shores can we wander but we are surrounded by the spirits of the illustrious dead, by the mighty chiefs who led on to conquest, by the eternal shades of men who were the pillars of a trembling state? On the plains of Marathon we are met by Theseus and Miltiades; at the pass of Thermopylæ by Leonidas; at Sparta by Agesilaus; at Lebadia by Tlophonus; at Platæ by Aristides and Pausanias; in short, every spot of earth is classical, consecrated by history, poetry, and fame. If we search for ruins it is the same: their hold projecting glory meets us wherever we turn our eye. At Athens we have the Acropolis, crowned with the Parthenon; and in the ancient city, the Temple of Jupiter Olympus, and the Erecthium. At Argolis I see the relics of the most ancient of Grecian cities. At Mycene, the Gate of Lions and the tomb of Agamemnon. Every spot is hallowed by some mausoleum, some temple, some unknown remnant of ancient power. Such was Greece as a whole, and Corinth—an engraving of which accompanies this sketch—Corinth was the emporium of Greece; it was the prow and port of all the states. Here commerce waved her flag of sovereignty over the seas; here rose palaces the most magnificent; temples the most beautiful; theatres the most elegant; here statues, columns, caryotides, so glorious that the

world declared them the most finished that had ever seen the sun; they strove to imitate the style, and called it "the Corinthian," in honor of its birthplace. If circumstances allowed, we might tell the reader of its Acro-Corinthus; how it rose on the mount, and look as from a throne over the sea and land—of the many legends, beautiful and bright, which poetry has wreathed around the grottoes raised over the fountain of Pyrene, where the Muses made their special dwelling-place amid its pillars of Parian marble of the temple of Neptune, where were the chariots of the sea-god and of Amphitrite, drawn by horses covered over with gold and adorned with ivory hoofs. What tales might be told in connexion with Corinthian ruins, of Isthmian games which were held here, and the statues of the victors which crested the avenue to the temple of Neptune, reposing in all their glories, and shadowed with the laurel and the pine. A celebrated place was Corinth: there the learned met together to converse; they built their schools of knowledge, and widely was their wisdom known. Cicero styled Corinth, for the high brilliancy of its intellectual lustre, "Totius Græciæ lumen;" and Florus calls it "Græciæ decus." The wise resorted hither to enjoy the company of philosophers; and hither came the rich from all quarters of civilized Europe and Asia too, to refine the taste and expand the intellect. This originated the remark of Horace, which passed eventually into a proverb,—"Non cuivis homini contingit adire Corinthium." Connecting these circumstances together, we thought that in glancing over the proud ruins of our world, none

arrangement is necessitous; none other than that which exists, could have sufficed.

Besides, rays of light passing through different media, are separated into their primary colors, and the picture on the retina would not be faithful (though its proportions might remain), unless the lenses of the eye possessed different refracting powers. This is the very method adopted, in the structure of the eye, to produce a perfect picture on the retina; it is an adaptation to the laws of light, and the property of color, in natural objects.

Again, the size and capacity of the eye, and the extent of vision, are expressly adapted to the wants of man. The eye embraces a class of objects which bear a certain proportion and relation to himself. A microscopic eye is suitable only for the wants of an insect, and could not have answered the necessities of man. These necessities, therefore, must have been foreseen and provided for, in the creation of the eye.

Still farther: if the eye had been fixed, and unalterable in its structure, it would have required a uniform distance of the objects of which it took cognizance; if the lenses of the eye had been of the consistence of bone, they might still have answered the purposes of vision, but the range would have been limited; there is, therefore, an express adaptation in the structure of the eye, to the various distances of the objects which are presented to it; its lenses are subject to the action of muscles which minutely change their form, adjusting them so that the rays of light from an object may, with certainty, form a faithful image on the retina. This can not have arisen from any use or effort of the eye, for it depends upon the consistence of the lenses, and the existence of muscles, either of which would have been insufficient without the other.

Yet again, there is an adaptation of the eye to the degree of light in which an object is placed, a capacity of contraction and expansion of the pupil, which is, perhaps, of all mechanical contrivances in the human system, the most exquisitely beautiful and singular. This too is a prospective contrivance.

The defensive provisions of the eye furnish incontestable evidence of wisdom and beneficence. Its locality, its orbit, its lids, the contrivance to prevent the intrusion of foreign particles between the ball and the orbit, the projection of the bones of the brow, the cheek, and the nose, the eyebrows, the lashes, the secretions to moisten and lubricate it, the soft cushion on which it rests, and the toughness of its outermost coat; these are all defensive provisions, and they deserve especial consideration.

It may be said, these defensive provisions are inseparable from the existence and use of the organ, absolutely necessary for its preservation; yet, certainly, the structure of the eye as an optical instrument, is complete, without the aid of any defences; they are, indeed, needful to the continuance of its use, and we say, therefore, that the supply of this necessity furnishes direct evidence of wisdom and beneficence.

Yet, beyond this testimony, we perceive still more independent proof of the "predominant tendency of the contrivance." The existence of the eye is indis-

pensable to the preservation of man: yet, the *pleasure* which is derived from its use is not indispensable. This is a superadded property; separate and distinct from any *necessity* of the organ. It is an undeniable manifestation of benevolence. The eye is a means of enjoyment, an inlet of happiness; and its ministration is higher and nobler than mere animal preservation. This property could have proceeded only from a purely *gratuitous* bestowment of its Creator. It indicates a loftier order of adaptation, than any before observed: the adaptation of visible nature to the wants and happiness of the mind, the adaptation of the world without, to that within. "Every object in nature," says a modern writer, "hath its own beauty."

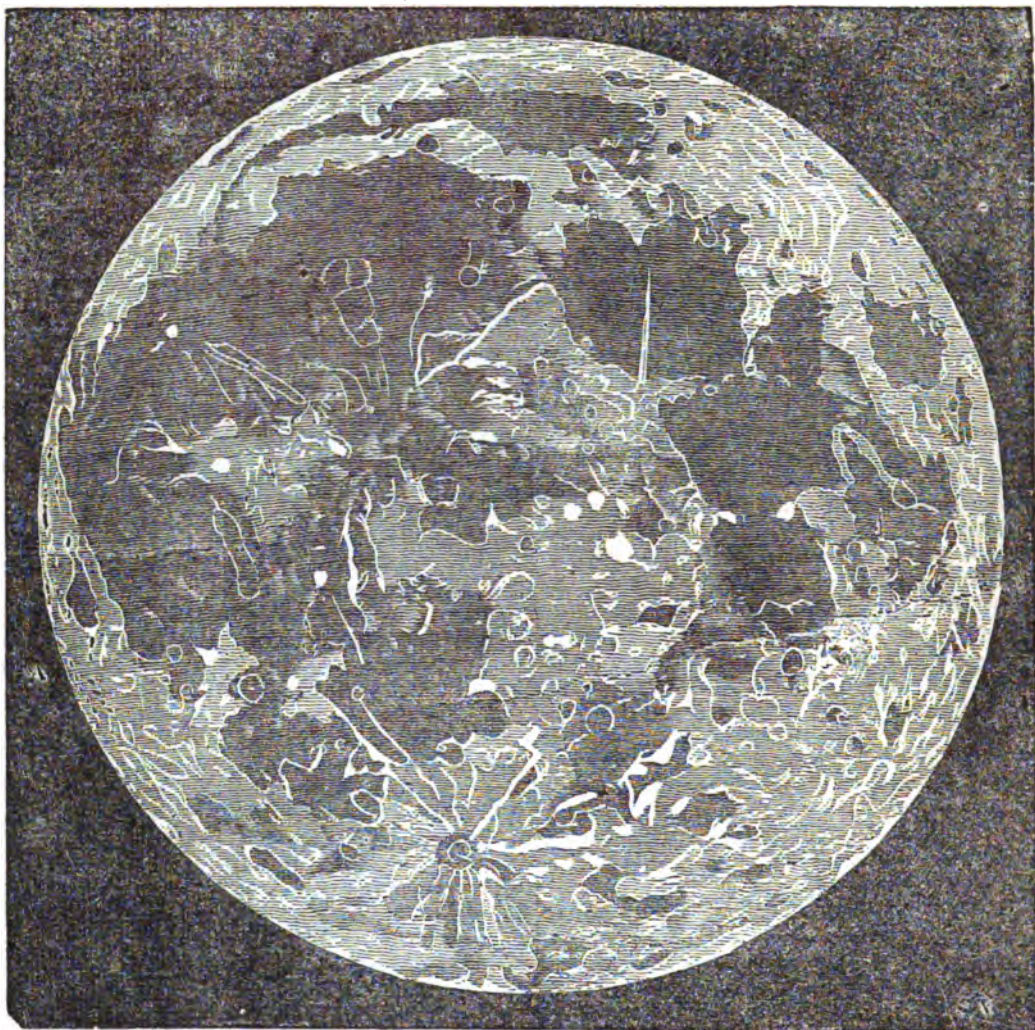
"To the eye of Nature's silent worshipper,
The naked rock is beautiful."

But, without asserting that all objects are beautiful, we may safely affirm with Balguy, that the pleasures of vision are "not only superadded, but almost of unmixed gratification, having but few pains to balance them."

That little organ, the eye, what a glorious office it hath! to read the heaven-writ volume of nature, that revelation of God to man; to dwell upon the pages of inspiration, to behold the creations of genius, to perceive the soul-beaming features of friendship and affection, and to interpret to the enraptured heart the voiceless language of holiest love and self-forgetting sympathy. The eye, it is an inlet of inexpressible joy and beauty; truly its far-soaring and wide-searching power, so akin to thought, whose handmaid sight is, should lead the soul from earth to heaven, from the seen and temporal to the unseen and eternal, from Nature up to Nature's God.

How to do Good.—A quaint writer who takes to himself the cognomen of Chas. Quill, gives a short and easy method of doing good, which will be found as effectual a one as could be adopted.—He says—"Why do you begin to do good so far off? This is a ruling error. Begin at the centre and work outward. If you do not love your wife, do not pretend to such love for the people of the antipodes. If you let some family grudge, some peccadillo, some undesirable gesture, sour visage toward a sister or daughter, pray cease to teach beneficence on a large scale. Begin not at the next door, but within your own door—then with your next neighbor, whether relative, servant, or superior. Account the man you meet the man you are to bless. Give him such things as you have. 'How can I make him or her happier?' This is the question. If a dollar will do it, give the dollar. If advice will do it, give advice. If a look, a smile, or a warm pressure of the hand, or tear, will do it, give the look, smile, hand, or tear. But never forget that the happiness of our world is a mountain of golden sands, and that it is your part to cast some contributory atom every moment."

Two citizens courting the daughter of Themistocles, he preferred the worthy man to the rich one, and assigned this reason—"I had rather she should have a man without money, than money without a man."



TELESCOPIC APPEARANCE OF THE MOON.

"THE neighboring moon her monthly round
Still ending, still renewing through mid-heaven
With borrowed light her countenance triform,
Hence fills and empties to enlighten the earth,
And in her pale dominion checks the night.—*Milton.*"

To an inhabitant of the earth the moon at all times presents an object of the highest interest and attraction, and in all ages of the world "this refulgent lamp of night" has been the subject of the deepest respect. Among the Orientals, and the Hebrews in particular, her worship was extensive and famous, and she was more regarded than even the sun. The new moons, or the first days of every month, were observed as festivals, and were celebrated with sound of trumpets, entertainments, and sacrifice. The full moon, we are informed, was considered favorable for any undertaking by the Greeks, and no motives could induce them to enter upon an expedition, march an

army, or attack an enemy, till the full of the moon. Plutarch relates that the Athenians entertained terrific ideas of eclipses of the moon, for Nicias and his army, when capable of retreating unobserved from the enemy, refused to embark from Syracuse because the moon became suddenly eclipsed in the dead of night. This ignorant and superstitious conduct proved fatal to that heroic commander and his brave companions, who were all shortly afterward either slain or taken prisoners.

Although one of the smallest of the heavenly bodies, from her proximity to the earth she is apparently the largest and most brilliant. Her beautiful appearance in the skies, with her regular variations, attracts the notice of the most inattentive and unobservant spectator. She is the inseparable companion of the earth, her satellite, and while she revolves round her primary, revolves also with her round her common centre, the sun.

The diameter of the moon is two thousand one



MAP OF THE MOON.

hundred and seventy miles—her distance from the earth is two hundred and forty thousand miles, round which she revolves in about twenty-nine days, and a half; thus she travels twelve times round our earth in one of our years; hence it would appear that the inhabitants of the moon can only have twelve days in one of our years, but each day is equal to twenty-nine and a half of our days. She rises every night at fifty-two minutes later than on the preceding night, having travelled thirteen degrees toward the east, and travels round the ecliptic in eighteen years and two hundred and twenty-five days.

The moon is an opaque body, shining only with reflected light—such is evident from the different appearances she assumes. If she shone by her own native light, she would always appear full, but as she shines only by reflecting the light of the sun, her luminous part presents different shapes according to her situation as it respects the earth: sometimes we see her with a full face, bright in every part—some-

times with her western side only bright; and again we observe her perhaps during the day like a fleecy cloud, with her western part ragged and torn; and after a little time we have lost her altogether, till at the return of a certain period she makes her appearance. These changes constitute some of the most striking phenomena in the heavens, and the cause that produces them is the rotatory motion of the moon about our earth.

Her orbit like that of the planets is an ellipse, but considerably more eccentric, and its plane does not coincide with that of the ecliptic, but is inclined to it at an angle of five degrees; the two points where the moon's orbit intersects the ecliptic are called the moon's nodes; that in which the moon passes from the southern side of the ecliptic to the northern, is called the ascending node, and the other the descending. The moon always turns the same side toward the earth, and the earth is as it were a satellite to the moon, and must present a most splendid appearance

from the moon, being thirteen times as large as the moon is to us. On that side of the moon, however, which is turned from the earth, that planet can not be seen, and if a lunarian whose customary place of residence is on the farthest side of the moon, has his curiosity excited by the marvellous tales of travellers from this side of the lunar surface respecting a large body shining almost continually in the skies; before he can be convinced of the truth by ocular demonstration, he will have to make a journey of about fifteen hundred miles—not always fixedly keeping the same side toward him, or rising and setting as the moon does to us, but presenting all its sides in the course of twenty-four hours of our time. The earth occasionally will present a luminous ring, occasioned by our eighteen degrees of twilight, and at times a beautiful crescent.

The surface of the moon as a telescopic object, presents a most interesting appearance, indicating that its surface is composed of hills, valleys, and caverns, and perhaps of seas, lakes, and rivers, and all the varieties of distribution that are known to be on the surface of the earth, although the actual existence has not yet been ascertained. That there are mountains and hills in the moon, may be inferred with considerable certainty from those parts which are supposed to be elevations casting a shadow opposite to the sun, as well as from the jagged appearance of the edge of the moon when she is horned or gibbous; the valleys and cavernous parts are distinguished by the shadows appearing next to the sun. Some of the mountains form elevated continuous ridges, others are insulated and conical, having the precise form of the terrestrial volcano. The assertion is startling, but there are lunar volcanoes in different stages; Dr. W. Herschell saw three in a state of ignition at the same time—they resembled a small piece of burning charcoal covered by a thin coat of white ashes, and he further noted a large portion of burning matter which he supposes was more than three miles in diameter. The height of the lunar mountains was formerly supposed to exceed very considerably that of the mountains of the earth, but the laborious exertions of Herschell and others have determined the fact, that none of them exceeds five miles in height.

The inhabitants of the moon, if the moon be inhabited by beings whose organization resembles our own, must be capable of living with a very small quantity of atmospheric air and little water. It has been a subject of discussion whether or not she is furnished with an atmosphere. Reason and analogy decide in the affirmative, but it is less than a mile high, and is never clouded, so that the sun must shine for a whole fortnight without intermission on the same spot, without having his heat materially moderated either by the interposition of the atmosphere, or by the evaporation of the moisture. That there is very little water in the moon beyond perhaps springs and small rivers, has been inferred from two remarkable circumstances—the absence of clouds, and the irregular appearance of the margin of the moon as seen in a solar eclipse, no part of it being terminated by a line sufficiently regular to allow us to suppose it the surface of the fluid. The light emitted by the

moon produces no heat; if her rays are concentrated by a powerful mirror and thrown on the bulb of a thermometer, no effect is perceptible; the light of the full moon is three hundred times less than that of the sun. When the moon is full in the highest or lowest part of her orbit, she does not appear perfectly round; in the former case a trifling deficiency is apparent in the lower edge, and the contrary in the latter, in consequence of our not having a full view of the enlightened side. The moon is of course a spherical body; for a luminous globe, though but at a small distance from the eye, will appear like a plain or circular flat surface,—this will be evident to any one who makes the experiment with a cannon ball heated red hot.

Connected with the moon are many important subjects, such as eclipses, tides, etc. An eclipse is the interception of the light of one of the luminaries by the interposition of an opaque, and in respect to their objects are characterized as a solar or lunar eclipse. An eclipse of the moon is occasioned by the intervention of the body of the earth directly between herself and the sun, thus intercepting the sun's rays; or it may be otherwise described as resulting from the passage of the moon through the shadow of the earth, and at the same moment that we observe an eclipse of the moon, the lunarians must witness a solar eclipse. When the moon's entire light is intercepted, it is called total; when only part, it is termed partial. Eclipses of the moon happen only when that planet is at the full; because then only does the earth intervene between the sun and it; neither do they occur every full moon, or in those full moons which happen in the nodes or very near them. If the moon's orbit was in the plane of the ecliptic, that is, if she moved in the same plane as the earth and sun, there would be an eclipse of the sun every new moon or change, and an eclipse of the moon every time she was at the full; but these frequent and regular privations of light in the sun and moon are prevented by the moon's course being in an oblique direction to the ecliptic, which she only twice intersects in every period. The number of eclipses of the moon is two. The largest duration of a total eclipse is five hours and a half. A remarkable one occurred in 1647 when the figure of the moon could not be seen even with a telescope, although the sky was clear and stars of the sixth magnitude were visible; and in 1454 the moon was eclipsed by a comet. This phenomenon is one of great importance to us, and also to the inhabitants of the moon—if that planet be inhabited by beings of similar capabilities and wants as ourselves. By a lunar eclipse the sphericity of the earth is determined, the deduction that the sun is larger than the earth and that the earth is larger than the moon; for if the sun were not larger than the earth, the shadow could not converge or end in a point; and if the earth were not larger than the moon, the latter could never be totally eclipsed, but the earth's shadow envelopes it at the distance of the lunar orbit—the longitude of places is also ascertained by the same phenomenon.

Those regular ebbs and flows of the sea which are termed tides, are also produced by the influence of

the moon in conjunction with the sun. It is reported of the philosopher Aristotle, that he threw himself into the Euripus because he could not ascertain the cause of the flux and reflux of the sea; this may possibly be an idle tale, but we are nevertheless certain that the ebbing and flowing of the sea was one among many of the subjects the ancients were not able fully to comprehend. The appeal which Canute made to the certain irresistible flow of the sea, when he meant to rebuke his flattering courtiers, is a proof that at a very early period of English history the tides had drawn attention, and as no one can notice them for any length of time without perceiving that on the same days of the moon's age they happen at the same place at very nearly the same hours of the day—a connexion between them and the moon could not fail to be traced. It is easy to suppose that although the attractive influence can not alter the shape of a solid part of the globe, yet it may nevertheless produce certain effects upon the fluid portions. Thus then it is the ocean is drawn toward the moon, and it is therefore high water at the place perpendicularly under the moon or where the moon crosses the meridian. If we fix a string to the side of a flexible hoop and swing it round in a circle, we may readily conceive how the part next the hand would draw out or swell by the drawing of a spring, and also how the opposite part would fly or swell by the centrifugal force, it being least drawn in, and how the intervening parts of the hoop would become depressed and flattened. It is thus with the ocean; that part which is immediately under the moon is raised by its attraction up into a swell, and that part which lies on the opposite side of the earth is thrown up into a similar swell by the motion of the earth in its orbit, by the centrifugal force.

The sun has also some action on the waters, but only in the proportion of three to ten, in consequence of his great distance from the earth compared to that of the moon: sometimes it happens at the full and change of the moon that the sun's attractive force is united with that of the moon and increases it. This union is productive of what are called spring tides; at other times, during the half moons, the attractive power of the sun and moon counteract each other, and produce what are termed neap tides—the word *neap* is derived from the Saxon; it signifies low, decreascent, and is used only in reference to the tides.

From the earliest ages an opinion has been entertained that the moon has an influence on the weather and the human constitution; the celebrated Dr. Mead was a believer in this doctrine; it is certainly a fact that insane persons experience an increase of their disorder at the full and change of the moon, and hence their disorder is called lunacy, from the Latin word *luna*, the moon. Whatever credence may be attributed to this idea, the wisdom and beneficence of the Deity to man are very conspicuous in the appointment of this attendant on the earth, the use of which is particularly experienced in the winter, she being much longer above the horizon when most enlightened in that season than in the summer; for at the time of her being full she always moves in a part of the zodiac opposite to the sun, and consequently describes nearly

the same circle of diurnal motion when at the full in December, as the sun does in June. The advantages of the harvest moon to the industrious husbandman are very remarkable; for at the autumnal part of the year she rises sooner after sun-setting than she does in any other full-moon week in the year. Thus she affords an immediate supply of light after sunset, which is very beneficial for those employed in the harvest and gathering in of the fruits of the earth.

How cheerless and uncomfortable would be our nights were we destitute of the light which this sister orb, our faithful and inseparable companion, dispenses! How important are even her eclipses in our astronomical, geographical, and chronological calculations. How salutary her mechanical influence, which balances the ocean and actuates the world of waters. We see in her—us in all the bright emanations from the divine hand of the Almighty—a manifestation of his wisdom, and a continual exemplification of his love.

TRIFLES.—Be not greedy of great gain. You will find it hard to eat more than a loaf a day—two coats worn at once are uncomfortable—a great house will but remind you of your own littleness, and continually mock you with the thought that your last habitation will be cold, dark, and narrow, one that wealth can not adorn, or make safe from the attacks of the clay worm.

Throw away pride. Humility is a safe garb in which to travel the dangerous ways of life.—The well-dressed man is often made to stand and deliver. He who walks in the dark, may break his head unless he stoops.

He who would live long, will live temperately. If you would take a long lease here, dwell not in an unhealthy house. Drunkenness is a pestilence, and poisons many habitations.

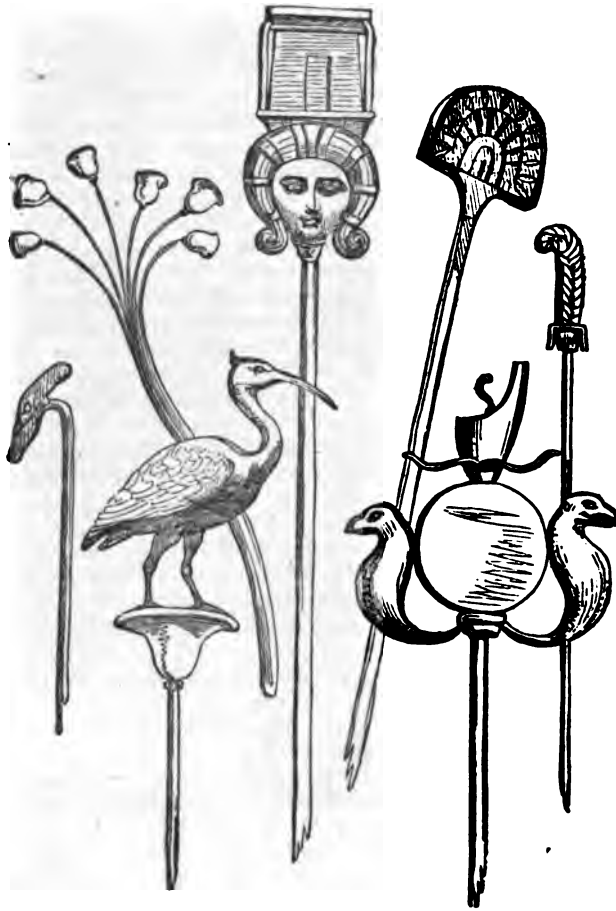
Distrust not your neighbor, nor covet his possessions. If you have confidence in yourself, you will have confidence in those around you. The honest man finds much that is pure and beautiful in the world: for his eyes are mirrors that reflect only on pleasant objects. But the knave looks through a darkened glass, and everything around wears a sombre—a forbidding aspect.

Are you a seeker after pleasure? Search out the poor, and minister to their necessities. As the bow that flashes across the dark waters, when the storm breaks up, is the reward that attends a good action.

Seek not to penetrate the mysteries beyond.—The brave man is master of his own fate, and buffets the opposing waves as they rise. Deal justly with your fellows; judge mildly of their errors; with your own hands earn your daily bread, and the frosts of age shall sit lightly on your brow.—The evening of your days shall be very calm, and a pleasant light shall linger and play about your grave.

Do not despise the poor. Remember that while honest virtue is often clothed in rags—vice flaunts it gayly in satin, and dazzles the eye with costly jewels.

If you are rich, study to be happy; if you are poor, strive to be content. Be wise enough to accommodate yourself to circumstances; do not fancy that they will accommodate themselves to you

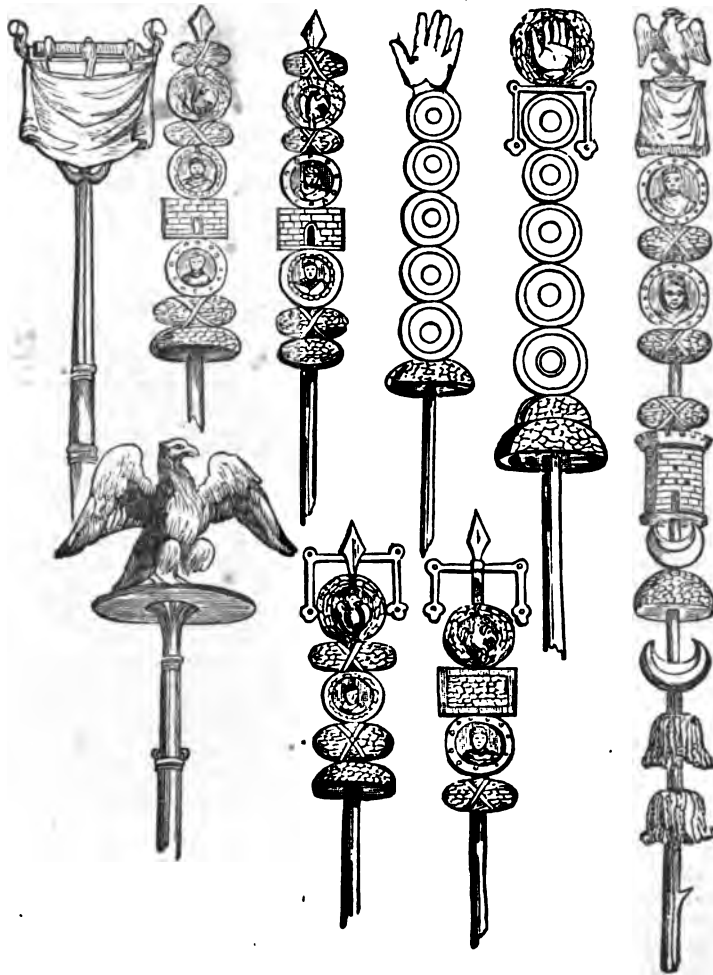


Egyptian Standards.

STANDARDS.

THE invention of standards is attributed by ancient authors to the Egyptians, and this with great probability, as they had the earliest organized military force of which we have any knowledge; we may therefore feel tolerably certain that the Hebrews had the idea of the use of ensigns from the Egyptians, for it is not at all likely that the small body of men which originally went down into Egypt had any such articles or any occasion for them. Diodorus informs us that the Egyptian standards consisted of the figure of an animal at the end of a spear. Among the Egyptian sculptures and paintings there also appear other standards, which either resemble at top a round-headed table knife, or an expanded semicircular fan. These latter are attributed to the Græco-Egyptians; but we are unable to find any satisfactory data to show that they were any other than varieties of most ancient Egyptian standards. The early Greeks employed for a standard a piece of armor at the end of a spear; but Homer makes Agamemnon use a purple veil with which to rally his men. The Athenians afterward, in the natural progress which we observe in the history of ensigns, adopted the olive and the owl, and the other Greek nations also

displayed the effigies of their tutelary gods, or their particular symbols, at the end of a spear. Some of them had simply the initial letter of their national name. The ancient Persian standard is variously described. It seems properly to have been a golden eagle at the end of a spear, fixed upon a carriage. They also employed the figure of the sun, at least on great occasions, when the king was present with his forces. Quintus Curtius mentions the figure of the sun, enclosed in crystal, which made a most splendid appearance above the royal tent. We therefore presume it was the grand standard, particularly as even at this day, when Mahometanism has eradicated most of the more peculiar usages of the Persians, the sun continues to divide with the lion the honor of appearing on the royal standard. Among the very ancient sculptures at Persepolis, we discover specimens of other standards, as exhibited in our engraving. One sort consists of a staff terminated in a divided ring, and having below a transverse bar from which two enormous tassels are suspended. The other consists of five globular forms on a cross-bar. They were doubtless of metal, and probably had some reference to the heavenly bodies, which were the ancient objects of worship in Persia. The proper royal standard of that country, however, for many centuries until the



Roman Standards.

Mahometan conquest, was a blacksmith's leathern apron, around which they had at one time been rallied to a successful opposition against the odious tyranny of Zohauk. Many national standards have arisen from similar emergencies, when that which was next at hand being seized and lifted up as a rallying point for the people, was afterward, out of a sort of superstitious gratitude, adopted either as the common ensign or the sacred banner. Thus also originated the horse-tails of the modern Turks, and the bundles of hay at the top of a pole which formed the most ancient Roman standard; as mentioned in the following extract from the introduction (p. liv.) of Dr. Meyrick's splendid work on "Ancient Armor:"—"Each century, or at least each maniple of troops, had its proper standard and standard-bearer. This was originally merely a bundle of hay on the top of a pole; afterward a spear, with a cross-piece of wood at the top, sometimes with the figure of a hand above, probably in allusion to the word *manipulus*, and below a small round or oval shield, generally of silver or of gold. On this metal plate were usually represented the warlike deities, Mars or Minerva; but, after the extinction of the commonwealth, the effigies of the

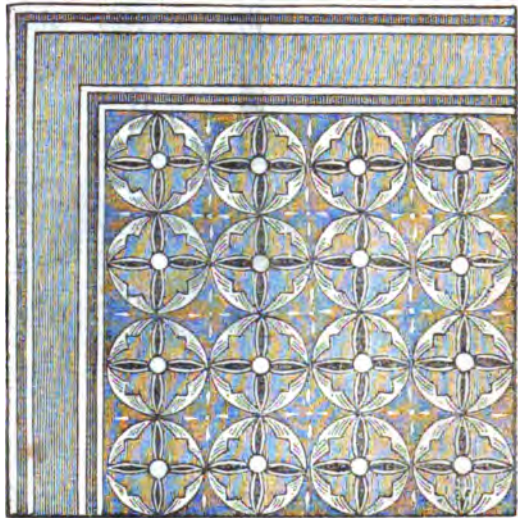
emperors and their favorites; it was on this account that the standards were called *numina legionum*, and held in religious veneration. The standards of different divisions had certain letters inscribed on them to distinguish the one from the other. The standard of a legion, according to Dio, was a silver eagle with expanded wings, on the top of a spear, sometimes holding a thunderbolt in its claws; hence the word *aquila* was used to signify a legion. The place for this standard was near the general, almost in the centre. Before the time of Marius figures of other animals were used. The vexillum, or flag of the cavalry, was, according to Livy, a square piece of cloth, fixed to a cross-bar at the end of a spear." These flags had sometimes fringes and ribands, and were used less restrictedly than Dr. Meyrick seems to state. The divisions of a legion had also their particular ensigns, sometimes simply attached to the end of a spear, but sometimes fixed below the images. An infantry flag was red; a cavalry one blue; and that of a consul white. As to the *hand* on the Roman standard, we may observe that at this day the flag-staff of the Persians terminates in a silver hand, as that of the Turks does in a crescent. After

Trajan's conquest of the Dacians, the Romans adopted as a trophy the dragon, which was a general ensign among barbarians. The dragons were embroidered in cotton, silk, or purple. Mention is also made of *pinnae*, which seem to have been aigrettes of feathers of different colors, intended for signals or rallying points. Animals also, fixed upon plinths, with holes through them, are often found; and were ensigns intended to be placed upon the ends of spears. In the East, the use of standards fixed upon cars seems to have been long continued. We have observed that this was a usage in ancient Persia, and at a period long subsequent we find it existing among the Saracens: Turpin, in his "History of Charlemagne," mentions it as belonging to them. He says, "In the midst of them was a wagon drawn by eight horses, upon which was raised their red banner. Such was its influence, that while the banner remained erect no one would ever fly from the field." This custom was afterward introduced into Europe, and found its way to England in the reign of King Stephen: after which the main standard was borne, sometimes at least, on a carriage with four wheels. The main standard of Henry V., at the battle of Agincourt, was borne thus upon a car, being too heavy to be carried otherwise.

MOSAICS.

Mosaics are imitations of paintings by means of colored stones, pieces of glass, of marble, and even of wood of different colors, cemented together with much art. The name is sometimes supposed to be derived from *Moses*, as the pretended inventor; sometimes from *musa*, in the sense of elegance, beauty; and sometimes from *musæum* (a grotto consecrated to the muses), perhaps from the circumstance that mosaic work was first used in grottoes. We know nothing with precision of the invention and history of this art in antiquity. Probably it originated in

the East, but received its perthetion from the Greeks, and was thus conveyed to the Romans in Sylla's time. In Italy, and in most of the countries occupied by the Romans, many floors ornamented with mosaic work have been found among the ruins. When, in the fifth century, the arts and sciences were driven from Italy by the distracted state of the country, this art was preserved by the Byzantine Greeks, and was restored to Italy in the thirteenth century, where it attained the highest perfection, particularly when Clement VIII., at the commencement of the seven-



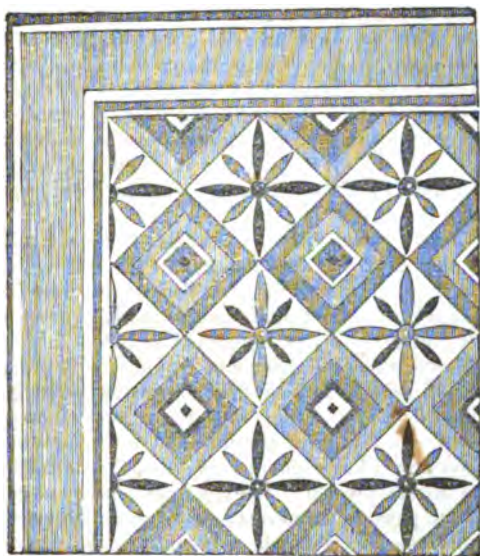
teenth century, had the whole of the interior of the dome of St. Peter's ornamented with this work. Giambattista Calandra improved mosaic by the invention of a new cement. He and many succeeding artists employed the art for copying original paintings



of famous artists, and thus eternizing them in their original freshness and beauty; for one of the greatest advantages of this kind of painting is its wonderful power of preservation. In this manner Guercino's



Martyrdom of St. Petronilla, and Domenichino's Communion of the dying St. Jerome were preserved. Peter Paul, of Christophoris, founded, at the commencement of the eighteenth century, a school for mosaic in Rome, and many of his scholars carried the art to a still higher degree of excellence.



In recent times two kinds of mosaic are particularly celebrated—the Rome and the Florentine. In the former the paintings are formed by joining very small pieces of stone, which gives greater variety and elegance, and facilitates the representation of large historical paintings. The Florentine style, which makes use of larger pieces of stone, is far more troublesome, and is adapted only for simple subjects. Mosaic in wood the Italians call *tansia* or *tarsia*; the French *marqueterie*. In the most costly mosaics, precious stones have been cut to furnish materials; but in common works of this art enamels of different colors, manufactured for the purpose, are the material employed. The enamel is first formed into sticks, from the ends of which pieces of the requisite size

60

are cut or broken off. These are confined in their proper places upon a plate of metal or stone, by a cement made of quick-lime, pulverized limestone, and linseed oil. The cement is spread over the plate, and a drawing made on it to guide the artist, before he commences his work. He has also constantly



before him the painting to be copied. After the whole has adhered, it is allowed to dry for two months, and is then polished with a flat stone and emery. Inlaid works, of agate, and other costly stones are executed on the same principle as mosaic, except that the stones are cut to the shape of the different parts of the object to be represented, whereas in mosaic the pieces are of the same size and shape.

The *opus reticulatum* of the ancients, with which columns and walls are sometimes encrusted, is found to consist of small stones of a pyramidal form, the apex of which is imbedded in mortar, while the base, which is polished, forms the outer surface. A mode has recently been invented of sawing the plate with the mosaic paintings into two or three sheets, and thus multiplying the paintings. Should smoke or dirt soil the surface, it has only to be polished to be restored to its original beauty. In 1819, Fernbach, a native of Baden, invented a new kind of mosaic painting, imitating with surprising fidelity the color, the juncture, the lustre, &c., of mineral bodies. Professor Blank's mosaics of moss have also attracted much attention.

STAND FAST!—Under all the trials of life, *stand fast!* Would you wish to live without a trial? Then you would wish to die but half a man—at the very best, but half a man. Without trial you can not guess at your own strength. Men do not learn to swim on a table. They must go into deep water and buffet the surges.—If you wish to understand their true character—if you would know their whole strength, of what they are capable, throw them overboard!—over with them! and if they are worth saving, they will swim ashore of themselves.

ORACLES AND MYSTERIES.

MANKIND have been the victims of oracles, and mysteries, and pretended conjurors, and what they have chosen to call "wise men," ever since the beginning of time. Not contented with deriving instruction from the great volume of Nature spread out before us, and sufficiently capable, if rightly interpreted, to train the mind to wisdom, our poor infatuated race has too frequently been led to seek knowledge in the vain practice of astrology, divination, and other tricks and absurdities, now divested of all credit, and justly held in contempt by every reflecting mind. Every one in early life, in reading ancient history, is troubled to know what measure of credit should be given to the ancient oracles and mysteries, concerning which there are so many marvellous tales to be found. Rollin's ancient history, a book much read among us, often mentions the responses of the oracles of antiquity. The writer was a pious, excellent man, but was fond of the marvellous, and not a little inclined to superstition. He believed that wicked spirits were sometimes permitted, by an all-wise Providence, to reside in these caves or inner shrines, to deceive mankind, by indirectly shadowing forth things to come. Other historians have spoken of the magicians, soothsayers, and astrologers, as having great confidence in their supernatural knowledge.

The first account we have of these *wise men* is that given by Moses, in his interview with Pharaoh. They were soon convinced that they could not struggle with the great Lawgiver, and yielded after a few trials of their skill. These magicians were scientific men, who soon discovered the natural from the miraculous.

The whole worship of Isis, in Egypt, was full of mysteries, and these *wise men* alone had the key to them. Tombs, temples, and all public buildings, and all the arts and sciences, were full of mysteries to the common people. It was the same in Persia and Assyria as in Egypt. The wise men were advisers of the king, and he supported them in ease and dignity. They were called in by Belshazzar to interpret the handwriting on the wall, but could not read it.

When the Greeks made themselves masters of the learning of Egypt and Babylon, they found these mysteries of no small importance to themselves. They kept up the same air of secrecy, and devoted them to religious purposes. The oracle of Delphos having by accident established a reputation for correct prophecies, continued it, by art, for religious, but more frequently for political purposes. The Pythia, in every age, was a shrewd woman, who knew what was wanted, and who it was that inquired of her for knowledge; and her answers were made accordingly. The Egyptians and the Greeks were well acquainted with acoustics, and sounds were managed for their mysterious responses. That they understood the science of sound, witness the ear of Dionysius. The mysteries of Isis, and the Eleusinian mysteries, were kept up by subterranean caverns, so constructed as to throw strange images before the eyes of the initiated, by means of moveable lights, and by tubes conveying strange sounds, when they were in darkness, to frighten them. Every one can tell how busy the

imagination is when we are a little alarmed for our safety. These strange sounds, persons accompanying those about to be initiated, were allowed to hear, and sometimes they saw flashes of strange lights. There can be no doubt but that some of these ceremonies were awfully imposing. The higher orders unquestionably understood the whole thing, but the lower did not. From the whole concurrent testimony of ancient history, we must believe that the Eleusinian mysteries were used for good purposes, for there is not an instance on record that the honor of an initiation was ever obtained by a very bad man. The hierophants—the higher priests of the order—were always exemplary in their morals, and became sanctified in the eyes of the people. The high-priesthood of this order in Greece was continued in one family, the Eumolpidæ, for ages. In this they resembled both the Egyptians and the Jews.

The Eleusinian mysteries in Rome took another form, and were called the rites of Bona Dea; but she was the same Ceres that was worshipped in Greece. All the distinguished Roman authors speak of these rites, and in terms of profound respect. Horace denounces the wretch who should attempt to reveal the secrets of these rites; Virgil mentions these mysteries with great respect; and Cicero alludes to them with a greater reverence than either of the poets we have named. Both the Greeks and Romans punished any insult offered to these mysteries with the most persevering vindictiveness. Alcibiades was charged with insulting these religious rites; and although the proof of his offence was quite doubtful, yet he suffered for it for years in exile and misery; and it must be allowed that he was the most popular man of his age.

These mysteries were continued until some time after the days of Constantine, in the sixth century, when they were prohibited. Sad stories have been conjured up to give importance to the Egyptian mysteries, but no one has attempted to throw any dark shade over those of Greece or Rome. The philosopher will readily believe that there was nothing supernatural in any of their mysteries; and all may set it down as a fact, that the initiated never pretended to anything like a commerce with the inhabitants of the invisible world. They unquestionably often assumed to possess wondrous powers and great secrets; but this was only a means of keeping knowledge from becoming too common; and this was an error which lasted for ages, even down to our times.

Viewed by the light of a clear understanding, I believe all the marvellous deeds of the magicians, the astrologers, the soothsayers, the Pythia, and the whole tribe of these mystery-dealing beings, vanish into things, if not easily explained, yet certainly to be traced out. Incantations, charms, and talismans, which thicken on every page of early history, are dissolved before the torch of reason.

The Sibylline oracles of Rome had once great influence among the people, and many honest men have now a belief that these oracles foretold the coming of Christ; but the wise part of our theologicians have long since given up this fancy, for it can hardly be called a belief. The fourth pastoral of Virgil contains

the supposed prophecy. The following is as fair an account of it as we have seen :—

“The Sibylline oracles having received information from the Jews, that a child was to be born, who should be the Saviour of the world, and to whom nations and empires should bow with submission, pretended to foretell that this event would occur in the year of Rome 714, after the peace concluded between Augustus and Antony. Virgil, viewing this prophecy with the vivid imagination of a poet, and willing to flatter the ambition of his patron, composed his celebrated Eclogue entitled *Pollio*, in which he supposes the child, who was thus to unite mankind and restore the golden age, to be the expected infant of Octavia, wife to Antony, and half-sister to Augustus. In this production the consul Pollio, Octavia, and even the unborn infant, are flattered with his usual delicacy ; and the rival Triumviri, though a short time before in open hostility, have the honor of equally sharing the poet's applause.

“While Pollio, who seems to have been the most accomplished man of his age, and is celebrated as a poet, soldier, orator, and historian, was engaged in an expedition against the *Parthini*, whom he subdued, Virgil addressed to him his *Pharmacutria*, one of the most beautiful of all his eclogues, and in imitation of a poem of the same name by his favorite author Theocritus. This production is the more valuable, as it has handed down to posterity the superstitious rites of the Romans, and the heathen notions of enchantment. Virgil himself seems to have been conscious of the beauty of his subject, and the dignity of the person whom he was addressing, and accordingly has given us, by the fertility of his genius, and the brilliancy of his imagination, some of the most sublime images that are to be found in any of the writings of antiquity.”

Some of the Christian fathers have stated, that on the eve of the birth of Christ, all the oracles of the heathen world ceased. It is certain that the Delphic oracles grew into disrepute about this time ; but the Elusinian mysteries, and those of the Bona Dea, were kept up much longer. Milton adopted the belief of the early fathers of the church, and has expressed his poetical opinion, in an ode upon the subject of the silence of the oracles, which is full of deep interest and exquisite beauties. But there is no more reason to think that he was convinced of this as a fact, than that he believed all the incidents in his *Paradise Lost*.

All superstitions are to be traced to the diseases of the body or the mind. The filters and charms are made for a diseased body or mind. Sometimes they may be efficacious, by chance ; sometimes nature, the best of nurses, overcomes all obstacles, and heals the malady in spite of the nostrums prescribed. Among the ignorant, in all nations and ages, these panaceas are found. The greater the ignorance, the more efficacious the charm. The charm called the Obi, or Obiah, which is now practised in Jamaica, and other slaveholding places, was brought from Africa, and is now known throughout the country bordering on the Senegal and on the Gambia, and probably is a very ancient superstition. Something resembling this

charm has been practised by the various tribes of Indians all over our own continent.

Feeble minds, under the influence of supposed guilt, are more likely to be affected by superstitious feelings than strong ones, full of deeds of blood. Sickness, fatigue, and hunger, would have made Hercules a whining child, as chills and fevers did the mighty Cesar ; but a sound mind in a sound body, with a good education and a clear conscience, will never fear the charms of superstition, the spells of witchcraft, nor the power of magic. The seeds of superstition are too often sown in the nursery, and cherished in our youthful days. Bugbears are too often mingled with lullabies, and raw-head and bloody-bones with the first tales given to amuse infancy. The household divinities should all be pure, kind, lovely characters, having countenances of beauty, and tongues of truth. The stories of the fireside should be free from all hobgoblins and monsters.

There are perhaps many things in our history, and even in our natures and our hopes, hard to be understood, and some portion of them that the Great Author of our race never intended that we should be fully acquainted with. A sound mind will very readily comprehend enough of its powers and capacities to teach it, never to strive to attain what is above human reach, or to sink with fear at that which it can not readily explain. Seen by the light of philosophy and sound sense, all the marvellous deeds of the magician, the astrologer, and the whole tribe of those who attempt to deceive the people, sink into those of common men.

MANNER.

THERE are those who manage to glide along through the world by a kind of mannered legerdemain, who have acquired their manner in the ancient school of Proteus, and by their singular dexterity in ever imparting the required impression, from moment to moment, fail not in their social objects. There is a species of shufflers, who succeed, by virtue of an *off-hand* manner, which mankind, in general, are content to yield to. The most popular class is, doubtless, that which reduces Chesterfield to practice, on principle, and with veritable punctilio: These devotees lean on a broken reed. Their faith in a manner is too perfect. With wonder did I once hear a man of sense console himself for the unprincipled conduct of his son, by declaring that “through all he had kept his manners.” When tact at mere verbal rhyming constitutes a poet, musical memory a composer, or taste in colors a painter, then may we believe that manner will make a man, for,

“Heaven never meant him for a passive thing,
That can be struck and hammered out to suit
Another's taste and fancy.”

There is a policy in manner. I have heard one, not inexperienced in the pursuit of fame, give it his earnest support as being the surest passport to absolute and brilliant success. And who, that has been chained, for hours, as by enchantment, with the grace and

elegance of an orator, and then, in solitude, reviewed his words and recalled not a single original and impressive idea—has not realized this? It is wonderful how a skilful mannerist can deceive the world as to his acquirements and motives. We habitually suspect the truthfulness of a prominent manner. If, in the presence of an individual, he induces us to think continually of his manner and forget himself, we are quickly aware of our want of affinity. There is no delight in his fellowship. Of all forbidding inventions, an assumed manner is the most effectual. We instinctively anticipate the forthcoming scene behind our backs. Some masterly delineation of the Duke of Gloster, in the act of hurling away the prayer-book, occurs to us. We are ill at ease; we seem to hear the laugh and witness the mimicry which is to occur when the door has closed upon our exit. We discern beyond the smile and the honeyed word, and are sickened at the self-created hollowness of a human heart. We have admirable provisions in our civil code, for the crimes of perjury and over-reaching. A thrice heavy penalty should fall upon him convicted of deliberately and habitually practising upon mankind, through the agency of a pre-assumed, politic manner. Manner is the universal language, the grand circulating medium; and should not the attempt to counterfeit the genuine, native stamped coin, be made penal? There are no greater forgers in the universe than cunning mannerists. Their whole lives are false. The loveliest of human attributes, the beautiful, the winning virtue of sincerity abides not with them. They have abjured the profession of humanity. They have become players—with none of the ideal interest and singleness of purpose which may belong to the legitimate followers of Thespis. The wearisome rehearsals, the guarded conduct, the oppressive sense of having a part to play, the struggles between the real man and the assumed character—all press upon and disturb them; and there is for them no refreshing returns to nature, no blissful interludes in the trying drama, for habit has bound them to the task, and policy goads them on.

There is a poignancy in manner. I have often heard a friend describe the effect produced at a well-surrounded dinner table, by the silence of a gentleman to whom one of the company, in a very audible voice, had addressed an impertinent question. The tacit rebuke was most keenly felt; it was more effectual than a public reprimand, and yet how entirely devoid of irrational severity. Similar results may be effected through expert application of manner.

An instance occurs among the innumerable anecdotes related of John Randolph. A young aspirant for congressional fame saw fit, in his maiden speech, to give proof of his boldness and eloquence, by a long and abusive attack upon the eccentric member from Virginia. At the conclusion of the young orator's voluminous address, the hero of Roanoke arose, and stretching his long, nervous arm toward the seat of the complacent youth, with a half-inquiring, half-contemptuous look, thus replied:—"Mr. Speaker, who's that?" There was a sarcastic bitterness in his manner, under which the offender quailed. There

is a power in manner. How finely Byron describes, in the bearing of Conrad—

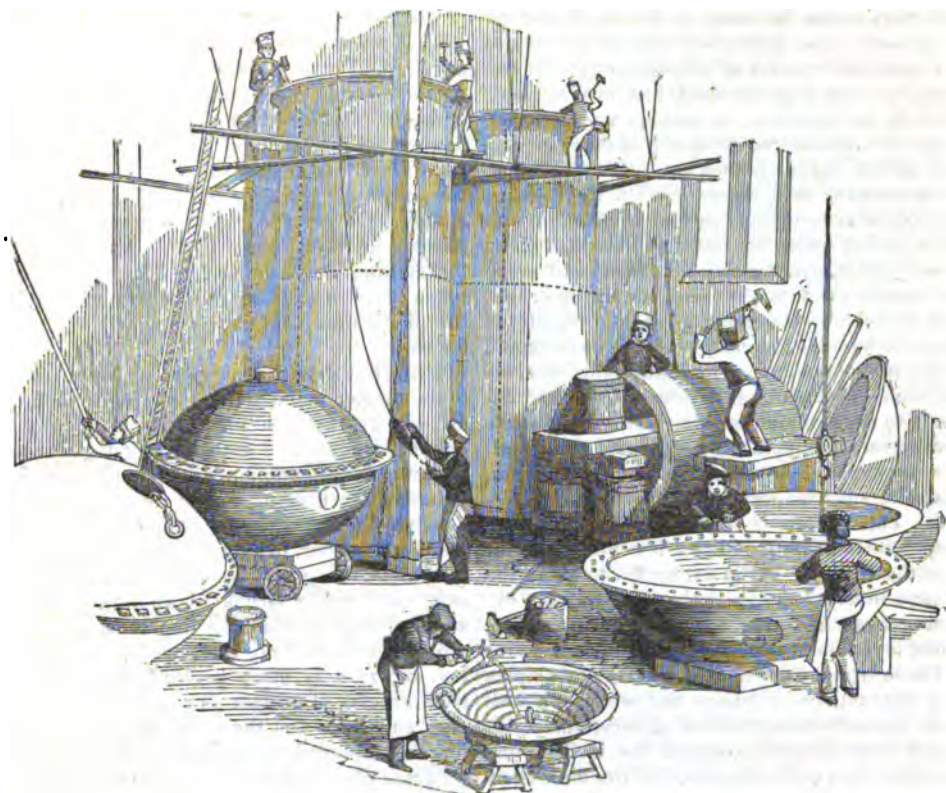
"that commanding art
That dazzles, leads, yet chills the vulgar heart."

Who that is susceptible to nature, will deny that the sway of manner consists in its truth? We speak of the impressive dignity of some of the Indian tribes; kings might strive to imitate it in vain. It is the gift of nature—the ennobling grace of the forest lords. The companionship of genius—when do we most perfectly realize it? When enthusiasm has led the gifted mind into such an outpouring that manner is forgotten, and every look and movement is instinct with soul. In aged persons and children—those who have lived too long to meditate effect, and those who, as yet, listen only to the inward oracle, we most frequently see the perfect spell of manner. What a world of allurements is involved in the common phrase, an unaffected manner! Nothing is no delightful as what is spontaneous. A frank expression of sentiment, a native manner, captivate; thrice happy when the latter is habitual. Memnon's image imparted not its mysterious strains except at the touch of the sunbeams, nor will manner yield its true witchery from any inspiration but that of the soul.

BELLS.—The chime of bells is so intimately associated in idea with the rural sounds and domestic quiet of the country, that we listen to it with the same feelings inspired by the singing of a woodland brook over its path of pebbles, the hum of insects in a summer field, or any other of the many voices of nature. To have heard the chimes once, though it be but a broken recollection of infancy, is enough. The ear never forgets while the heart feels. It is said that the delight caused by hearing the sound of bells, is altogether arbitrary; that we cheat ourselves into the belief of their melody by their associations of home, or the village church under which we have always heard them. Perhaps so; but the real existence of some things consists not in what they are, but in what they appear. This is a vile doctrine in morals, but it is good philosophy in other matters. The lover who "sees Helen's beauty in a brow of Egypt," violates no law of morals, or rule of logic, but is most reasonably entitled to his belief. It is no deception of conscience or injury done to honesty; it is a good trait, and commendable in society. It is one of those inalienable rights of faith like the natural claims to liberty, that are born before systems or modes of government, and survive them too. But bells have an artist-like music of their own, of a far higher tone than that drawn from violins, or other earthly instruments. They are hung aloft in the pure air toward the skies, or, as the sainted George Herbert says of them in his Church Porch,

"Think when the bells do chime
'T is angels' music."

The chime of church bells reminds me of a loftily built nest of singing-birds in some forest-tree, joining their varied notes together in mingled harmonies.



A DAY AT A COPPER AND LEAD FACTORY.

AMONG the three or four public thoroughfares leading from Holborn to Fleet street, is one wherein the "clinking of hammers" may be heard at all hours of the day, and frequently of the night too. The labors of the "copper-smith" are in no part of London exhibited on a more extensive scale than in Shoe Lane, the thoroughfare here alluded to, in which are many factories for articles of copper, and also of brass, lead, tin, and other metals. To one of these factories, viz., that of Messrs. Pontifex & Wood, we shall direct our attention in the present article, those gentlemen having liberally given the requisite permission.

As we have endeavored in each number of this series, to give a brief outline of some one particular branch of manufacture, in connexion with the establishment visited, we must here make a remark or two on the mode in which many of the manufactures in metal are conducted. All the iron, the copper, the lead, the tin, of which such innumerable articles are manufactured in London, come to the metropolis in a more or less prepared state. The iron, for example, is brought into the state of cast-iron, or pig-iron, or bar-iron, at the iron-works in Wales, Scotland, or the midland counties; and is recast or reformed on a smaller scale in London. So likewise the copper, the tin, and the lead, are brought into a purified state at the smelting-works in the country, and converted into the various forms at the London factory. It there-

fore often happens that the routine of operations necessary for one kind of metal so nearly resembles that required for another, as to lead to the combination of both under one establishment. This is the case at the factory to which our attention will be here directed, and indeed the combination of trades is here so considerable, that a further explanation is necessary. Messrs. Pontifex & Wood undertake the entire arrangements connected with the fitting up of sugar-refineries, distilleries, and breweries, in all of which copper utensils are used on an extensive scale; and the iron and other metal work required is also finished and adjusted at the establishment. The wooden vessels called "backs" and "vats," used in these three branches of manufacture, are likewise made here, as are also lead-pipes and sheet-lead. The various trades, therefore, of copper-smiths, brass-founders, engine-makers, lead-manufacturers, back and vat makers, and others to be enumerated hereafter, are all combined by this firm.

Under these circumstances, a detailed account of all the operations would be wholly beyond our range in this article: we shall therefore only give a general description of the factory and its internal economy, together with the operations of the copper, lead, and mixed metal manufacture.

Before analyzing the dark, the dirty, the busy, the noisy scene which the ground floor of the factory presents, we will descend a flight of iron steps leading therefrom, and grope our way through a series of under-ground vaults. These vaults are used prin-

principally as store-rooms for metal in the crude and the partially manufactured state, and exhibit evidences of a very complete system of arrangement. In one department are the pigs of lead, just as they were received from the smelters: in another are blocks of tin, ready to be melted and worked; in other departments are all the various pieces and parts for pumps, engines, machines, &c., either cast in the foundry on the premises, or brought from foundries in the iron districts. Every room or vault is surrounded by shelves or drawers, every shelf is marked, and every piece of metal, even to the smallest screw or nut, deposited in its proper compartment, and registered in a book. The superintendent of this department, who conducts his operations by lamp-light, receives from the founders these multifarious pieces, and delivers them to the foremen of the works above stairs when wanted for manufacturing purposes. Many hundred tons of metal, comprising iron, copper, brass, gun-metal, tin, and lead, are here deposited.

In these cellars, too, is situated the opening of a very deep Artesian well, bored a few years ago for the use of the factory. It is excavated to about the depth of one hundred feet, and then bored to the extent of another hundred; and is worked by the steam-engine employed for various other operations above stairs. Those who are acquainted with the principles governing the actions of pumps and wells, are well aware that probably on account of underground communications through porous strata, the well of one factory is often seriously influenced by the sinking of another several hundred yards distant from it. Such is frequently the case at some of the great breweries; and such is the case at this factory on Saturdays, supposed to be owing to the extensive working, on that day, of the steam-presses for some of the Sunday newspapers in and near Fleet street.

The factory, being situated on the western bank of the once famed "River Fleet," is twenty feet lower at the eastern than at the western extremity; and such is the loose and porous nature of the soil, once the bank of the stream, that very deep and extensive foundations have had to be made for the furnaces, casting-table, and other heavy machinery on the principal floor. In excavating the ground for forming these foundations, a fact was ascertained, which, as far as we are aware, has never been indicated by any other circumstance—viz., the probable former existence of "tanneries" at or near this spot: large tan-pits filled with horns were found, having probably been formed on the bank near "Old Bourne Bridge," where the "Old Bourne" (Holborn) flowed into the Fleet. That the water of the latter stream was at one time plentiful and pure enough for the purposes of tanning can not be doubted. Whether or not the name of "Shoe Lane" owed its origin to the former location of the leather manufacture in or near it, is a question for the antiquarian topographer to decide.

We now ascend to the main floor of the factory, extending to a depth of a hundred and fifty or two hundred feet from west to east. The northern portion of this range is principally occupied by the mechanism connected with the lead manufacture; while the southern relates more particularly to the manufacture

of copper. On one side we see a large furnace, wherein five or six tons of lead are being melted at once: near it is the square trough into which the melted metal is poured to form large and thick masses of lead. Adjacent to this is a powerful crane for hauling up the lead and passing it on to a system of rollers. Then ensues the apparatus (to be described presently) for working the lead into thin sheets. At another part of the range, but included in what is termed the "lead foundry," are two smaller furnaces, for melting the lead and tin for forming pipes and tubes; and in another are the arrangements whereby the pipes, thus cast, are elongated and made ready for use.

From this department we cross over to that devoted to the copper manufacture; and here such is the din and clatter, that a stranger finds it no easy matter to collect his ideas and see what is going forward. Men wielding large hammers are on every side fashioning vessels and articles of copper: here a sugar-pan, there a sugar-filtering cylinder, in one place a boiler, in another a copper, in a third a still, in a fourth a worm. The metal being very sonorous, and being held on an iron anvil while struck by an iron hammer, yields sounds much more strong than musical. On one side are forges for heating the metal necessary for soldering, or, as it is more generally termed, "brazing," such articles of copper as can not be jointed by rivets; and here and there are small, open, temporary forges, employed for annealing the copper during the progress of the manufacture. Some of the huge vessels seen in this part of the building exemplify in a striking degree the modern improvements in the mode of conducting the sugar-refinery, for which the vessels are intended: this is especially exemplified by the large clarifying cylinders now occasionally used in a certain stage of the sugar manufacture, some of which are sixteen feet in height. Our frontispiece represents a part of the busy assemblage presented in this copper-shop; most of the vessels seen being connected in some way or other with the sugar-refinery, but others pertaining to distilling or brewing.

In the ground-story are also the foundry and the smithery, which like the parts just described, require a solid foundation for the heavy furnaces, &c., contained therein. In the foundry are all the arrangements for casting small works in brass, in bell-metal, in gun-metal, and in other mixed metals, where copper, zinc, lead, and tin are the component ingredients. Here too is an air furnace, for use in cases where a higher heat is required. The smithery presents the usual assemblage of forges, anvils, and other apparatus necessary for the forging of iron.

Among the mechanical arrangements for facilitating the removal of heavy goods from one part of the factory to another, we noticed an ingenious railway fixed *near the ceiling or roof*, whereby boilers, coppers, stills, engines, &c., suspended from a wheeled carriage or frame, could be easily moved along above the heads of the workmen without disturbing the manufacturing arrangements beneath. This contrivance arose out of the necessity for economizing space.

The front portion of the second floor is occupied chiefly as a warehouse for finished goods in copper,

gun-metal, lead, &c. Here, too, are the various offices and counting-houses, and also a room appropriated to the draughtsmen. In the fitting-up of large factories, such as sugar refineries and distilleries, there are, as may be supposed, many drawings of plans, sections, elevations, diagrams, &c., necessary not only for making a contract and showing the proposed action of the whole machinery, but as working drawings for the guidance of the workmen. The preparation of such drawings is effected in the office here alluded to, where labelled drawers are devoted to the reception of different classes of drawings.

Behind the warerooms and offices extends the brazier's shop, presenting a busy scene of industry. It is a long apartment, having windows all along both sides, and benches immediately beneath them. The pattern room is another of those which exhibit the advantages of systematic arrangement in a large factory. This room is fitted up with cases, shelves, and boxes, filled with patterns in wood, clay, or metal, of the various pieces required to be cast in the foundry below. Every pattern, large and small, is numbered or ticketed, so as to be readily found when wanted. To let everything "have its place, and be in its place," is the simple but valuable principle on which alone the operations of such establishments as these can be kept free from confusion.

Above the floor just visited is a warehouse for unfinished or partially manufactured goods; and a long shop for the back and vat makers. If we were to speak of cisterns and tubs, we should convey a much more definite idea to the minds of general readers, than by using the technical names backs and vats: but the truth is, that each large branch of manufacture has almost a language of its own, the workmen seeming to delight in having a phraseology unintelligible to others. Thus, the brewer's liquor-back is to all intents and purposes a water cistern; yet not only are the two words water and cistern not used in a brewery, but in some breweries a fine is imposed, and insisted on by the men, on those who may happen to use the plain English words. We make this remark here as the best mode of explaining that a back is the technical name for large wooden cisterns or vessels employed in distilling and similar operations; and that a vat is a tall wooden tub or open cask. The manufacture, which to a small extent is carried on in this range of shops, is a superior kind of cooperage.

The remaining workshops of the factory are occupied by mill-wrights, machine-makers, pump-makers, and others employed in fitting up and putting together the various pieces of metal which, after being cast and forged elsewhere, are employed for the construction of machines and other apparatus. To enumerate all these various machines would be here both impracticable and unnecessary: they are of all degrees of complexity, from a water-cock to a steam-engine, and of various kinds of metal. But we may observe that one of these workshops extends a hundred and fifty feet in length; and along the entire extent of the room, just below the ceiling, and midway between the sides, is a roller or hollow cylinder, kept in rotation by a connecting band from the steam-engine beneath: this, as a source of power, sets in motion a large

number of lathes, drilling-machines, screw-cutting machines, &c., placed beneath. In this room all articles of brass, gun-metal, &c., which have been cast in the foundry beneath, are turned, polished, and finished.

The dross which arises during the melting of pigs of lead, known as lead ashes, the clippings, the crust which collects round the melting-pots, and waste pieces of various kinds, whether copper, brass, lead, or tin, are thrown on the floor during the daily operations, and to prevent the loss of the metal contained in this assemblage is an object of some solicitude. In the first place all the larger pieces of metal are separated, the smaller are passed beneath a rolling-mill; and are then placed in a revolving washing-machine, to be separated as much as possible from the dirt. The pieces of metal which are too fine to be picked out from the heap of dirt by hand, are washed well in water, being held in sieves moved in such a manner as to allow all the dirt to be washed away from the small particles of metal: this is effected by men called in the factory dirt-washers, who have acquired great dexterity in the management of the sieve. Lastly, the regained metal is exposed to the fierce heat of an air-furnace, whereby it is melted into a uniform state: and in this state it is useful for mixing with new copper, to form a compound metal for various purposes. Many tons of valuable metal are thus annually recovered from the otherwise useless dirt of the factory. On several occasions the quantity has amounted to thirty tons per annum, which at seven pence per pound (its estimated value) gives a sum of no mean amount, as the value of the metal regained.

We will now endeavor to follow the routine of some of the processes glanced at in the preceding paragraphs: explaining as we proceed, the nature of some of the very effective machines brought into requisition. Perhaps it may be well to speak first of the *lead* manufacture, as it will aid in the subsequent details relating to copper.

All brass-founders, bell-founders, iron-founders, lead manufacturers, and similar workers in metal, are desirous of obtaining *old* metal to mix with new. So it is likewise with the glass manufacturers, who mix cullet or broken glass, with the flint and alkali for forming new glass; and also broken crucibles in the manufacture of new ones. The old ingredient gives to the new certain valuable qualities not possessed by the latter when used singly; perhaps because the old material has acquired a better amalgamation, a more complete union of its parts, whether it be a metal, or glass, or baked earthenware. Be this as it may, old lead-pipe, old sheet-lead, old copper, sheathing from ships, old copper-boilers, old bell-metal, are bought by the respective founders, to be employed in the construction of new articles.

As the amount of old material is, of course far beneath the quantity required, we have to speak of the form in which the new metal is brought to the factory. In the case of *lead*, the new metal is brought in the form of pigs, each of which is an oblong mass, about three feet long, six inches wide, and weighing about one hundred weight and a half.

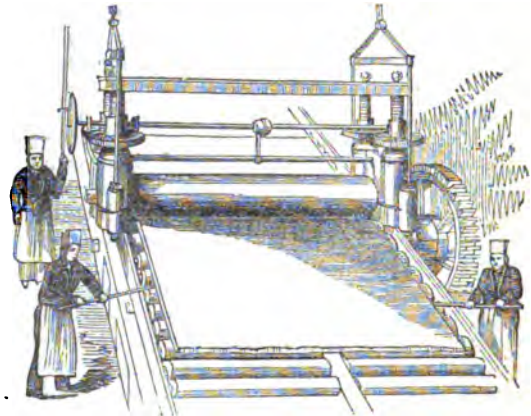
It appears that in the iron-manufacture, when the metal flows from the furnace in which it has been reduced from the ore, it passes into a large trough excavated in sand, and thence into smaller lateral channels on each side. This arrangement has been suggestive of a sort of simile: for the larger trough is called by the workmen the sow, and the smaller the pigs, who suck the metal from the sow; hence proceeded the names of sow metal, and pig-metal, and hence, in all probability, the name of pig, as applied to the saleable masses both of iron and of lead.

The two principal articles into which lead is manufactured are *sheet-lead* and *water-pipes*; or at least they are the only two which need here be noticed; since the comparatively low temperature at which the metal fuses, and the ease with which it is beaten into various forms, enable the plumber to modify it in various ways. The sheet-lead here spoken of is that with which roofs and terraces are covered and cisterns lined. It is sometimes made, and used formerly to be wholly made, by pouring the melted metal on a flat surface of sand, in a stratum of any required thickness. But the method pursued at Messrs. Pontifex's is the more modern one of rolling, or milling, which we proceed to describe.

A furnace is provided, consisting of a hemispherical melting-pot, four or five feet in diameter, and nearly as much in depth, heated by a fire beneath, and covered with an enclosed cap or chimney reaching above the roof of the building, for the purpose of conveying away the deleterious gases engendered during the melting of lead. Into this melting pot is put about six tons (thirteen thousand pounds) of lead, new, and old, which remains there till thoroughly melted. During this time all the impurities, being lighter than the metal, rise to the surface. Immediately adjoining the furnace is a cast-iron frame called the mould, being a flat vessel about six or seven feet square and six inches deep. The bottom of this mould is also of iron, and the melted metal is allowed to flow into it from an opened valve near the bottom of the melting-pot. The following cut represents this operation, in which it will be seen that a

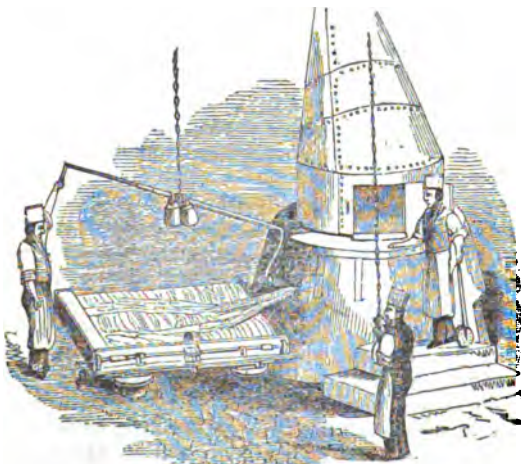
shoot or trough conveys the metal from the furnace to the mould. The glistening liquid mass soon flows out, to the weight of about ten or eleven thousand pounds, the dross and impurities being for the most part left behind in the melting-pot. As, however, some impurities or oxydised portions enter the mould, a subsequent removal becomes necessary; and this is effected by drawing the edge of a board carefully over the surface of the hot and liquid metal, the board urging before it all the floating impurities, and leaving a surface very silvery and clear.

After some hours the mass of lead, technically called a plate, is lifted out of the mould by a powerful crane, and placed upon the machine where it is to be rolled into the form of sheets. This machine is

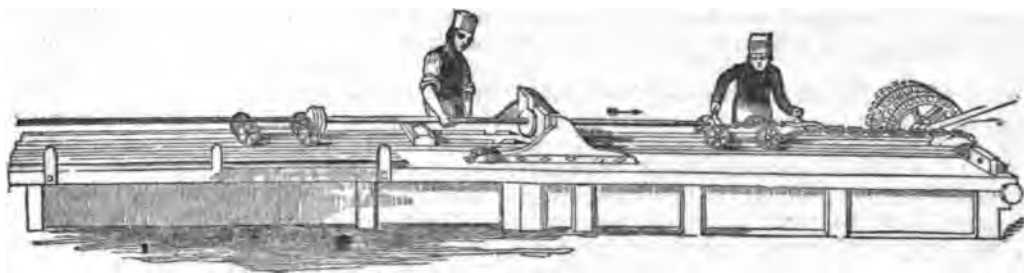


Lead-Mill and Frame.

very peculiar in its action. It consists of a long frame or bench, about a yard in height, seven or eight feet wide, and probably seventy feet in length. At intervals of every foot or two are transverse rollers, all placed on the same level, so that a heavy body may be rolled from one end of the frame to the other with great facility. About midway along the frame is the milling or rolling machine, consisting mainly of two ponderous rollers, between which the lead is passed: these are made of iron, the upper one being 15 or 16 inches in diameter, with a weight of three tons, the under one being the same. By means of very ingenious mechanism, the two rollers are placed at any required distance apart, the one above the other, and are also made to revolve in either direction. These being the mechanical arrangements, the process of milling proceeds thus: the plate of lead is brought between the rollers, which are opened so as only to receive the lead by compressing it; and the rollers being made to rotate, the plate is drawn in between them. This process is repeated over and over again; the plate passing first from right to left, and then from left to right, the opening between the rollers being gradually reduced by means of an index and graduated dial-plate. The small wooden rollers facilitate the motion of the elongated lead to and fro; and when the length, obtained by reducing the thickness, has become inconveniently great, the piece is cut into two, and each half milled in a similar manner. Thus, the lead continues to pass between the



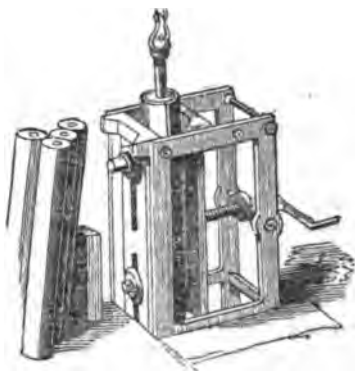
Lead Foundry.



Drawing-Bench for Pipes.

rollers, to the number of seven or eight hundred times, having its thickness diminished and its length increased by regular degrees. From three to four hundred feet in length, with a width of seven or eight, is the average quantity of roofing-lead produced by these means from one of the plates. The lead is then coiled up in a roll, and in that form is sold to the plumber, who adapts it to his various purposes.

The manufacture of lead-pipe, like that of sheet-lead, combines the processes both of casting and elongating or drawing. Whatever be the required diameter and thickness of the pipe, it is first cast in a short piece of great thickness, and then elongated, by which the thickness becomes reduced. The diameter of the cast piece is, internally, the same as that of the required pipe, the external diameter being that which undergoes reduction. The first process is therefore to cast the short pieces of pipe, which is effected in moulds similar to that represented in the subjoined cut. These moulds measure from two to four feet in height, and are fitted for casting pipe whose diameter varies externally from two to six inches, and internally from half an inch to four inches.



Mould for casting Lead-Pipe.

The mould consists of two semi-cylindrical halves, which on being brought together form the external contour of the pipe; while a spindle or steel core, running down the centre of the hollow cavity, regulates the internal diameter of the pipe.

A small melting-furnace is appropriated for the pipe-casting, the lead being carefully skimmed from dross while melting; and when the fusion is complete, the melted metal is poured into the mould, the upper end of which is open and the lower end closed. The quantity of lead required for each mould

varies from about twenty-four to two hundred pounds, according to the thickness of the pipe. The metal being solidified and sufficiently cool for handling, the two halves of the mould are drawn asunder and the lead removed; the technical name of the plug being applied to the short thick piece of pipe thus produced.

Next ensues the very singular method whereby the plug is elongated to the proper dimensions. The drawing-bench represented in part in the subjoined cut, is a frame about thirty feet long and three in height, having in the middle of its length mechanism for producing the elongation. An endless chain is kept in constant motion round two wheels or rollers, one near the end and the other near the middle of the draw-bench; insomuch that a hook or a clasp connected with one of the links would be forcibly drawn along the bench. A mandril, or steel rod, corresponding in size with the internal diameter of the pipe, is inserted into one of the short pipes or plugs, and then so connected with the endless chain as to be drawn along the bench; but, in its progress, the pipe has to pass through a hole in a steel-plate, or die, rather smaller than the diameter of the lead itself, by which its external diameter becomes somewhat reduced and its length increased. Again and again is the pipe, with its contained mandril, drawn along the frame; the die being exchanged after each drawing and replaced by one of smaller diameter. In producing a two-inch pipe no fewer than sixteen dies are employed, the diameters of which descend in a regular series. The hole through the die is conical, that is, larger on one side of the die than on the other; and the lead enters the hole at the widest part, whereby a process of compression is undergone; but at a certain point in the operations a cutting-die is introduced, that is, one wherein the lead is at once exposed to a cutting edge, the result of which is, that a thin film is cut or scraped from the whole surface of the pipe. By the time that all this routine is undergone the metal has become more dense and compact, the temperature so high as scarcely to be bearable by the hand, the length greatly increased, and the external diameter proportionably diminished. After this the elongated pipe is removed from the mandril and is then ready for disposal to the plumber.

Let us now turn our attention to those branches of manufacture in which *copper* is the principal metal employed. So far as regards the factory under our notice, copper is a more important metal than lead; and we have given precedence to the latter simply as a matter of convenience, because many of the ear-

ly processes in the copper manufacture may be more readily understood by comparing them with those in lead.

When we find that all copper vessels, and indeed almost all the more important articles made of copper alone, are formed from sheet-copper, it may naturally be asked how these sheets are produced. To answer the question we must point out the difference between the operations of the copper-miner, the copper-smelter, the copper-mill owner, and the copper-smith. The copper-miners, principally at the very western extremity of Cornwall, extract the ore from the metaliferous veins underground, bring it to the surface, and subject it to a slight preparatory process. The copper-smelters then purchase the ore in this state, and take it to the smelting-works, most of which are near Swansea in Wales, and there, by exposure to powerful furnaces, separate the copper from the other metallic and earthy substances with which it was combined. The form into which the copper is brought by the smelters is that of square pieces called tiles, measuring nine or ten inches square and an inch in thickness; and cakes of a somewhat larger size. These tiles and cakes of copper then pass to the copper-mill, of which there are many in various parts of England. The copper is remelted, and cast into various convenient forms, afterward to be passed between rollers, if sheet-copper be required. Whatever may be the particular manufacturing arrangements involved, the mode of casting and of rolling or milling may be sufficiently conceived from the details before given respecting lead. Not only is the copper converted into sheets at the copper-mill, but many of the large pieces, employed for sugar-pans and other large vessels, receive their first rude form there also, certain facilities being possessed for that purpose. Lastly come the labors of the copper-smith, who works up the rudely-shaped pieces into all the various forms required by the sugar-refiner, the distiller, the brewer, and other manufacturers.

The vessel called a sugar-pan may be taken as a convenient means of illustrating the operations of the copper-manufacture. It consists of a domed vessel, curved and enclosed both at top and bottom, having several apertures for valves, gauges, &c., &c., and a coil of copper-pipe within. The top and bottom, the one convex upward and the other convex downward, are each formed of one piece, which receives its curvature by a very remarkable process. The copper is in the first place cast into a form resembling that of a double convex lens or spectacle-glass, thickest in the middle, and diminishing gradually toward the edges. This lens is then subjected to the powerful blows of a tilt-hammer, directed more continuously near the centre than near the edges. A little consideration will show that this hammering, while it reduces the thickness of the copper, must make it curl up at the edges, or assume a dished or hollow form: we find that this is the case even when a flat piece of metal is hammered at its centre; and still more does this result ensue when an increased substance is given to the centre. The thickness of the centre is so adjusted as to afford metal enough for the curvature of the vessel; and the hammering is

continued till the thickness of the whole is brought nearly uniform. This is a very important process, since the fitness of the vessel for the operations of the sugar-refinery depends on the soundness and perfection of the metal. We saw a piece of copper which had been dished or hollowed in this way, and which, though worth forty guineas if sound, was rendered useless by a flaw in the metal.

The curved piece of copper just spoken of receives its form from the tilt-hammers at the copper-mill, and then passes into the hands of the copper-smith for the subsequent operations. The top and the bottom of the sugar-pan receive their form nearly in a similar way: but many smaller pieces have to be added in order to complete the vessel. The side is a portion of a cylinder, made of sheet-copper, and riveted at the edge. One of the most noisy operations in a copper-smith's shop is the hammering which the copper receives in order to render it dense and firm. The piece of copper is supported on an anvil or iron bed, and beaten with hammers in every part, whereby the particles of the metal are brought into more dense and compact union, and an additional degree of toughness is imparted. The ringing and clanging which this produces in a piece of sheet-copper perhaps seven or eight feet in diameter, is to a stranger almost deafening. The name applied to the process is planishing; and where the surface of the copper is very large, the operation has something of the picturesque effect presented by the anchor-smithery; for six or eight men, standing in a circle round the piece of copper, and each wielding a heavy hammer, strike the metal in succession, every part of the surface receiving probably as many as ten or twelve blows. Any one who examines a large copper vessel will see evidences of this planishing process, not only by the hammer-marks, but by the density and close grain of the surface.

An important part of the operations is that connected with the riveting or fastening of the joints. This is effected by making one edge overlap the other, and by passing a rivet through them, the point or small end of the rivet being afterward hammered down. Hence arise three steps in the process, viz., the punching of the holes for the reception of the rivets, the making of the rivets themselves, and the process of riveting. The punching-engine consists principally of a long lever, to the shorter arm of which is attached a punch corresponding to the size of the hole to be made, and generally of a cylindrical shape. The piece of copper is brought to the engine, and placed between the punch and the support beneath, so adjusted as to cause the punch to act on the exact spot where the hole is to be made. A pressure of the lever now causes the punch to descend on the copper, and to cut out a small circular piece corresponding with the required size of the hole. The piece of copper is then shifted onward through a small space, and another hole similarly made; and so on to the required extent.

In the process of riveting, each rivet, which is made at the forge, is passed into the hole bored for its reception, and the point or small end of the rivet is hammered down close to the sheet-copper, so

as to clasp it very tightly, having in fact a head or stay within and without. The edge of the copper is then calked, that is, hammered so as to bring the two surfaces of the joint into very close contact, forming a bond so intimate as to resist the passage of water, air, or steam.

Several of the openings into a sugar-pan, or indeed into other copper vessels used in manufactures, are not simply holes cut in the sheet-metal, but have collars or edges made of cast-metal, whereby the fastening can be effectually secured. These various pieces—the technical names for which need hardly be given here—are cast in sand in the usual manner, and are afterward turned and finished by other means.

The coil of steam-pipe which occupies the lower part of the interior of a sugar-pan, as a means of heating the sugar to be contained therein, involves operations of a different kind from those hitherto described. This coil usually consists of pipe about three inches in diameter, but much thinner than the same diameter of lead-pipe would be. In order to form it a strip of copper is taken, as long as may be conveniently obtained, and rather wider than the circumference of the intended pipe. The two edges of this strip are bent upward, to give the first semblance of a curve; and the piece is then passed through the holes or “dies” of the tube-drawing machine, by which it is made perfectly cylindrical, with one edge slightly lapping over the other. The joint thus made is secured by a process of soldering or brazing, aided by heat in the usual manner. Soldering or brazing, it may perhaps hardly be necessary to state, depends for its action on the different temperatures at which different metals melt. Thus, to join two pieces of lead, a mixed metal, or “solder,” is employed which melts and acts as a cement at a temperature that will not injure the lead. So, in like manner, two pieces of copper are joined or “brazed” by using a mixed metal partaking of the nature of brass, which remains fluid at a temperature not high enough to injure the copper. A small forge or brazing-furnace is employed to heat the metals, and borax is employed to facilitate the fusion of the brass.

Thus far the operations for making a copper-pipe are apparently simple; but the mode of bringing the straight pipe into the form of a coil is very curious. Any attempt to bend a pipe in this manner, so long as the metal is thin and the pipe empty, would be accompanied by a distortion of the sectional area of the pipe, originally circular, and perhaps by fracture. To obviate this, therefore, the interior cavity of the pipe is entirely filled up, either with lead, or with some composition which will melt and flow at a temperature not likely to injure copper. This being effected, the pipe becomes solid, and may then be bent without disturbing its shape, by the application of sufficient power. By a simple machine, downward pressure is exerted on the pipe at one part, while upward pressure is exerted on the adjoining parts, whereby the pipe is gradually coiled round into a form nearly resembling that of a common tea-saucer, fitted to lie in the bottom of the sugar-pan. By the application of heat on a temporary stove beneath, the interior composition is melted out, and the vacancy restored. The strength of the tube is tested by ex-

posure to steam of high pressure for several days; various minor adjustments are effected; and the coil is inserted in the sugar-pan.

Nearly all the vessels manufactured by the copper-smith are produced by various modifications of the processes here noticed. Cutting, hammering, riveting, planishing, brazing—these are the principal operations performed. If we were to select any other article, and trace it through the successive processes, we should find it, so far as mere description goes, little else than a repetition of the above details. There are, however, some exceptions to this statement, which we may here notice.

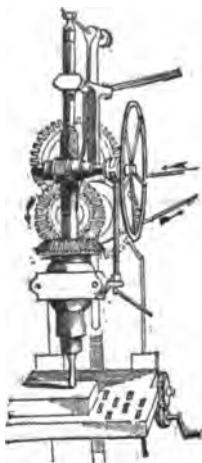
In the process of hammering the plates or large surfaces of copper, the hammered surface becomes hardened; and to remedy this, the copper is exposed to a strong heat for a certain time, and then plunged into water, by which an oxide is removed and the copper softened. For large sheets this process of annealing is effected on a flat stove about three feet from the ground; the stove being covered with burning fuel, and the copper laid thereon. A cistern of water is kept beneath the floor of the shop, near the stove, into which the heated copper is suddenly plunged, as a means of removing the external oxide. For smaller pieces temporary stoves or fires are adjusted in any convenient part of the shop, a draught being ingeniously supplied by a current of air forced through a flexible tube by the action of the steam-engine. This process of annealing is not effected in connexion with the “planishing,” but with that hammering whereby the shape of a curved piece of copper is produced. Let us suppose, for instance, that a hemispherical copper cup, a foot in diameter, is to be produced. A circular piece of copper, considerably more than a foot in diameter, is selected, laid on a sort of small convex anvil; and hammered in such a manner as to make the upper surface gradually convex. This is effected by a peculiar action of the hammer, whereby the metal is as it were driven from the centre toward the circumference, and gradually curled or turned up. But it happens that after a certain amount of hammering, the copper becomes so hard as to be in danger of fracture; and it is to remove this hardness that the “annealing” is effected. In one of the shops of the factory is an ingenious machine for producing the curvature of a piece of copper; in which the copper is worked to and fro between two small wheels or rollers, placed in more or less close approximation according to the pressure required.

The manufacture of copper-plates for engravers, one of the departments carried on at the factory will illustrate the means adopted for producing a level and brilliant polished surface of copper. The copper is in the first instance cut to the required size from a plate of the best and soundest quality; and is then scraped all over with a steel instrument to remove any slight defects that may exist at the surface. The workman occasionally holds a piece of oiled paper between the window and the plate, whereby a peculiar light falls on the latter, calculated to render the minutest flaws or defects visible. When scraped sufficiently, the plate is taken to an anvil and well ham-

mered, to render it more dense, and also to flatten it. The surface is then well ground with a kind hard blue stone wetted with water; and finally polished with fine charcoal, by which all the marks from the scraping, hammering, and grinding are removed. When it is considered that the finest lines produced by the graver must be made perfectly distinct and clearly marked, it may well be supposed that the surface is required to be free from scratches and imperfections of every kind.

Of the sugar-moulds, the clarifying-vessels, the stills and other vessels employed by distillers, the coppers for brewers, the copper baths, the copper boilers, and other vessels made of this metal, we shall refrain from saying more here. All are made of sheet-copper, all are hammered and annealed, and all are either riveted more or less extensively, or brazed.

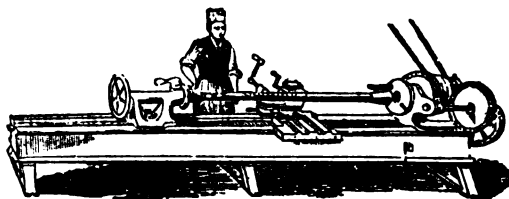
There are, in various branches of manufacture, many small pieces of mechanism made of brass or of some of the numerous compound metals in which copper is an ingredient, and which are usually cast in a melted state before final adjustment. For the production of such articles one department of this factory is appropriated. Pumps, water-cocks, valves, weights, measures, tubes or short pipes—these and scores of other articles are cast in loam or sand in a manner analogous to that of bell-founding. The model or pattern is made of different substances, according to the form of the instrument; and in those instances where an interior cavity is to be formed, there is an inner mould or model adapted to it. The metal, whether brass, or pot-metal, or bell-metal, or gun-metal, is melted in pots made of clay, by means of pot-furnaces placed beneath the level of the ground, and then poured into the cavities of the sand-mould.



Drilling Machine.

All such articles, when cast, have to undergo many processes before they are fitted for use; and to this object some of the upper shops of the factory are devoted. The internal cavity of various pieces of mechanism has often to be brought to great regularity and smoothness; this is effected at a lathe by means of steel instruments. An internal or an external screw or worm has sometimes to be formed; and this is likewise effected at the lathe, of which there are as many as sixty in one shop, some of a very

elaborate and beautiful kind. Sometimes holes are to be drilled, more carefully and regularly than can be effected by the copper drilling machine in the lower shop; and in such case the elaborate machine here represented is employed. Then again parts which work into or upon each other require various adjustments to make them work smoothly and regularly; and the outer surfaces of all are to be polished and beautified. All these operations, and many others which we can not enumerate, constitute a bustling scene of industry in the upper shops of the factory; the lathe, the file, and various polishing-tools being the chief implements employed. Of the lathes here alluded to, one is the beautiful machine for cutting screws, represented in the subjoined cut: its mechanism is at the same time so extensive, and so delicate,



Screw-cutting Lathe.

that it will cut a screw whose threads are eight inches apart, or one which has a hundred threads to the inch, or one having any intermediate number between these wide extremes. The principle of the machine rests on the combination of two movements—a rotatory motion of the bar to be cut into a screw, and a longitudinal motion of the cutting tool; and the distance between the threads of the screw depends on the ratio between the velocities of these two movements.

We stated, in the commencement of this article, that our description of processes must be confined to two or three branches. To show how impossible it would be to go beyond these limits, we will here simply enumerate the distinct branches of manufacture carried on, comprising works in five or six different kinds of metal: "Copper-smiths," for making coppers, boilers, baths, stills, sugar-pans, sugar-clarifying and filtering-vessels, coolers, fire-boxes for locomotive engines, &c.; "copper and steel engraving-plate makers," whose avocations are implied in the name; "brass-plate makers," in relation to the brass-plates for inscription; "fire-engine makers;" "beer-engine makers;" "pump-makers;" and, in short, makers of numerous engines and machines, wherein various kinds of metal are employed; "mill-wrights," for making the shafts, wheels, cranks, &c. whereby a moving power is applied to manufactures (nearly all the machinery contained and worked within the factory is manufactured there also); "brass, copper, and gun-metal foundries," for innumerable articles made of those metals; "brass-turners;" "gas-meter makers;" "lead-pipe and sheet-lead manufacturers;" "pewterers," for making certain parts of the apparatus used in some distilling and chymical processes; "back and vat makers;" for making the mash-tuns, hop-backs, under-backs, coolers, stillions, store-vats, and other vessels of wood used in breweries and distilleries; and other branches of a minor character.

THE CHRISTIAN'S GIFT.

JUST PUBLISHED,

THE MOST SPLENDID PICTORIAL WORK ON BIBLE HISTORY EVER
OFFERED TO THE AMERICAN PUBLIC.

Embellished with Several Hundred New and Fine Engravings.

The whole work (two volumes in one), making 700 large octavo pages, elegantly printed, and bound in the most finished style of modern bookmaking, and offered at the low price of \$3.00 per copy.

SEARS' NEW AND COMPLETE HISTORY

OF THE

H O L Y B I B L E,

AS CONTAINED IN THE

OLD AND NEW TESTAMENTS.

FROM THE

CREATION OF THE WORLD TO THE FULL ESTABLISHMENT OF CHRISTIANITY:

CONTAINING

A CLEAR AND COMPREHENSIVE ACCOUNT OF EVERY REMARKABLE TRANSACTION
RECORDED IN THE SACRED SCRIPTURES DURING A PERIOD OF
UPWARD OF FOUR THOUSAND YEARS.

WITH COPIOUS NOTES, CRITICAL AND EXPLANATORY,

FORMING AN

ILLUSTRATED COMMENTARY OF THE SACRED TEXT.

PART I.—THE OLD TESTAMENT HISTORY.

PART II.—THE NEW TESTAMENT HISTORY.

BY ROBERT SEARS.

AIDED BY THE WRITINGS OF OUR MOST CELEBRATED BIBLICAL SCHOLARS, AND OTHER LEARNED
PERSONS, WHO HAVE MADE THE SCRIPTURES THEIR STUDY.

TWO VOLUMES IN ONE.

THE LITERATURE, profane and sacred, is here united with the arts of printing and engraving, to produce one of the most valuable and interesting works ever issued from the American press. Commentators, lexicographers, oriental travellers, and Biblical critics of the greatest name, have been extensively and carefully consulted in preparing this work. The editor trusts it will be found worthy of the patronage of Christian pastors, instructors, and parents of all denominations; and well calculated, under the Divine blessing, to enlighten the understanding, purify the heart, and promote that KNOWLEDGE by which we may obtain happiness in this world, and eternal salvation in that which is to come.

ROBERT SEARS, EDITOR.

Agents, responsible men, are wanted to sell the above work, in every town and village throughout the United States and British North American provinces. For particulars, &c., address (post paid),

E. WALKER & CO., 114 Fulton street, New York.

A very liberal discount made by the quantity; and circulars supplied in any quantity to Agents.

RECOMMENDATIONS

OF

SEARS' HISTORY OF THE BIBLE.

TO THE CHRISTIAN PUBLIC.



MEN AND BRETHREN—The prevailing literature of the present day is evidently of a light and ephemeral character. The teeming thousands of novels and romances which float through the length and breadth of the land, plainly demonstrate that a taste has been created for a species of reading calculated rather to amuse the fancy than to improve the heart; to inflame the passions, than correct the life. It is true, that efforts are made for the improvement of our widely-scattered and rapidly increasing population—for the lessening of their miseries and the augmentation of their happiness. But even some of these are of a defective character; for it unfortunately happens that many are anticipating certain results from causes altogether inadequate to their production. Their hearts glow with impassioned ardor, as they enlarge with enthusiastic admiration upon the influence of civil liberty, improvements in political economy, beneficent laws, diffused philosophy, and wisely-formed plans of education. But with the destiny of man in a future state of existence they meddle not, while his responsibility to God, as a moral agent, gives them no concern; thus, they reach not the moral part of his nature, and consequently leave him with wants, which neither philosophy, laws, science, liberty, knowledge, or education, can possibly supply. This supply can only be found in an acquaintance with, and appreciation of, those heaven-inspired truths of revealed religion, which direct not only to the disease and desolation of our fallen nature, but to that **BLESSED REDEEMER** who is mighty and willing to save. Legislative enactments will not make us benevolent; the principles of political economy will send forth from our hearts no steady flow of generous feeling to our fellow-beings; neither will a knowledge of chymistry or mechanism curb the unruly passions or correct the vicious practices of wicked, unprincipled men. To reach these, we must avail ourselves of the instructions of that record which reveals the covenant of God as a resting-place for the soul: which makes known **JESUS CHRIST** as the atonement for sin, and spreads before the eye a bright and beauteous heaven as the Christian's final and glorious home. These truths, alone, are sufficient to grapple with the miseries and vices of our world, and, under the sanctifying power of their Author, regenerate and save the nations of the earth. For while all other efforts shall prove abortive, yet, under the reign of the Prince of Zion, and amidst the diffusion of the principles and power of his gospel, domestic affection, public virtue, and universal peace, shall be enjoyed by the nations of our earth. **"ALL NATIONS SHALL BE BLESSED IN HIM: ALL NATIONS SHALL CALL HIM BLESSED."** The "signs of the times" seem to indicate the dawn of that auspicious day. The almost universal peace at present prevailing among the nations of the earth is affording facilities for translating into almost every language, and circulating through every region, that **BLESSED VOLUME** which "liveth and abideth for ever." Travellers are exploring every land; commerce is extending to every people; our ships are touching upon every shore; and a way is thus opened for sending forth the missionary of the Cross to every nation, kindred, tongue, and people. The prediction of Daniel is receiving its accomplishment: "Many shall run to and fro, and knowledge shall be increased." And we trust the time will speedily arrive when their sound shall go through all the earth: when the solemnity of parties in the church shall only be seen on the dark pages of a past history: and when there shall be but "one fold," as there is but "one Shepherd;" and **JESUS CHRIST** shall be all in all—the theme of every tongue, the joy of every heart. Hasten it, **LORD GOD ALMIGHTY!** Thy people in all lands say, Amen!

THE EDITOR.

No. 114 Fulton street, New York city.

The following extracts are from a few of the numerous Recommendations that the "**BIBLE HISTORY**" has already received:—

From the Philadelphia Christian Observer.

This is a large and splendid work, in which scriptural instruction, well-executed embellishments, and rational entertainment, are happily blended. It contains a clear and comprehensive account of the most remarkable transactions recorded in the Scriptures during a period of more than four thousand years. The history commences at the creation, and is brought down to the destruction of Jerusalem, thirty-eight years after the cruci-

NOTICES AND RECOMMENDATIONS

OF

SEARS' BIBLE BIOGRAPHY.

THE Publisher of "BIBLE BIOGRAPHY" respectfully requests of the Christian Public a careful perusal of the following recommendations. In preparing the present volume, his aim has been to make a book *the very best and most useful ever published in modern times*—aiming at *universal* excellence, that it might justly be entitled to *universal* patronage and support. On examination, it will be found useful, and eminently adapted to interest, instruct, and improve. It is suited to persons of all ages and of every rank, and is equally worthy of a place in the parlor as in the kitchen, among the limited collection of the young, as well as the various and more extended library of the man of reading. We think it would be difficult to select a more appropriate GIFT at the approaching holidays. The writings of the most eminent divines that have ever lived are laid under contribution, and passages of eminent beauty are taken from them. If, therefore, variety has charms, or religion is lovely, or eloquence is admired this book will be read with delight: for here is variety without looseness, religion without fanaticism, and eloquence pleading the cause of God with man. A few only out of the numerous recommendations the work has already received, will be inserted here:—

From the Rev. Charles G. Sommers, A. M., Corresponding Secretary of the American and Foreign Bible Society.

MR. ROBERT SEARS—Dear Sir: Your new and beautiful work on the BIOGRAPHY OF THE BIBLE appears to attract the attention of all classes; and is undoubtedly destined to become, if it be not already, one of the most popular works ever issued in this country. The HOLY SCRIPTURES, on account of their antiquity, dignity, and other excellences, far exceed all the writings of the ancients. Indeed, if we consider how many centuries have passed away since they were compiled, and how miraculously they have been preserved to the present times, they plainly appear to have been the peculiar-care of God himself. We ought also to prize the SCRIPTURES, as comprising every species of KNOWLEDGE that is useful and entertaining. Would we know whence natural philosophy, with astronomy, and other appendages on it, derive their origin? Examine the books of Genesis, Job, and Ecclesiastes. What writings abound more in ethics or moral precepts than the sacred and sententious Proverbs? What more certain, regular, or pleasing history can we find, than in Genesis, Exodus, Joshua, and Judges? How free from sophistry are the HOLY SCRIPTURES, and how solid are all the arguments used in them! Geometry is displayed in the building of the Tabernacle, and the working in metals and wood was known long before the building of Solomon's Temple; in short, all manner of learning, arts, and sciences, is comprehended within those sacred pages. They are so exactly disposed, that they are a magazine, accommodated to all places, times, and persons: so that St. Basil justly calls them a Pharmacopoeia, furnished with medicines for all uses and necessities. From hence, in times of peace and religion, the learned acquired wisdom and eloquence; in times of heresy, they furnished the orthodox with stability in the faith, and assisted them in the subversion of error. From hence, in prosperity, we learn humility and modesty; in adversity, magnanimity and patience. In danger, it arms us with an honest zeal; and finally, if abuses insinuate themselves into discipline, and corrupt our morals, nothing but the rule of God's word can restore religion to its pristine state and dignity; for that alone should be the standard of our thoughts, and guide of our actions.

These reflections have arisen in my mind after a careful and serious perusal of your new and elegant work on SACRED BIOGRAPHY. It leads the mind of the reader, whether he be grave or gay, direct to the SCRIPTURES. All helps to arrive at their true meaning ought to be valued and encouraged. But the humble follower of the SAVIOUR will need no other recommendation to the diligent performance of this duty than that commanded by CHRIST himself—"Search the Scriptures." And in obedience to this precept, the apostles and fathers of the Christian Church made it their great concern to exhort all men to the study of them. The Old Testament is indeed a system of every kind of knowledge useful for the conduct of human life; and from which the philosophers and legislators of all ages drew the best of their observations, and the authors of both canon and civil law have from thence derived their most useful institutions.

But the excellency of SACRED HISTORY will more evidently appear if we compare it with the accounts of the best and most ancient heathen writers. How obscure and trifling are their stories of Deucalion's flood, of Prometheus, and Hercules, and their general notions of the existence of the world from eternity! In short, all profane history is filled with obscurity and fables, before the Olympiads, which were their first certain era, and which did not commence till many centuries after the time of Moses. And, indeed, if we pay just deference to it, we shall find it the best guide in the common daily transactions of life. There only we have the true account of the rise and fall of the most early kingdoms of the world; and by their example, either in prosperity or adversity, learn to be wise and happy. If we compare the Greek and Roman historians with the Sacred History, we shall find the latter to abound with the more illustrious examples of heroic virtue. Rome may boast of her Torquatus and Brutus, who, in a more brutal than generous bravery, sacrificed their sons to the public good; but who would not rather admire the obedience of pious Abraham, who had devoted his beloved Isaac a victim to the will of God? Historians and poets may applaud the courage of the Horatii and others, who, in defence of their country, slew their enemies in single combat; but how short do they come of the heroic David, who, though but a stripling, encountered and slew the gigantic Goliath, and by his death procured an easy victory over the Philistines! Alexander's virtue is worthy of praise, who, when he had conquered Darius, would not allow himself the pleasure of surveying his beautiful captives, lest he should be tempted to desire; but what is this to the continence of Joseph, who fled from the actual solicitations of his lascivious mistress into a loathsome dungeon? They may talk of the fortitude and success of their warlike heroes—their Caesar, Pompey, Hannibal, Scipio, and Alexander; but how much more illustrious the examples of Moses, Joshua, Samson, Gideon, David, and Saul, who, inspired with more than human courage, with a handful of men, trampled on their numerous enemies,—and to facilitate whose conquests, the very elements conspired, and fought on their side!

The time would fail me to go more fully into this subject. In the work before me I find a particular delineation of all the principal personages recorded in the Sacred Records. Who will not delight to read the stories of Moses, Samuel, Ruth, Job,—and, above all, the life, death, and sufferings of the REDEMPTOR himself? The volume must, from its intrinsic excellence—independent of its pictorial embellishments—prove a rich treat to all lovers of Bible History; and will be eminently useful in creating and cherishing a taste for the study of the SACRED ORACLES.

Yours, truly,

CHARLES G. SOMMERS.

"THIS IS UNQUESTIONABLY ONE OF THE MOST USEFUL AND POPULAR WORKS EVER GOT UP. IT IS DESTINED TO HAVE A TREMENDOUS SALE."—*Literary Advertiser.*

"THE ANCIENTS BOASTED OF THEIR SEVEN WONDERS; BUT THIS WORK WILL PROVE THAT WE MODERNS CAN LOAST OF OUR THOUSAND WONDERS!"
New York Messenger.

TO THE WHOLE WORLD!
GREAT ENTERPRISE!!
A MAGNIFICENT BOOK. A
FIVE HUNDRED ENGRAVINGS.

STOREHOUSE OF KNOWLEDGE FOR ALL READERS.

AGENTS WANTED.

A CAREFUL EXAMINATION of this Advertisement is respectfully requested of ALL PERSONS under whose eye it may come.

Just Published, and for sale at No. 114 Fulton street,
New York city—

AN IMPORTANT, VALUABLE, AND CHEAP WORK,

COMPLETE IN ONE VOLUME ROYAL OCTAVO—CONTAINING ABOUT

600 PAGES OF LETTER-PRESS, AND NEARLY

FIVE HUNDRED ENGRAVINGS,

Elegantly bound in gilt; price only \$2.50 per Copy:

Cost of Preparing the Work, \$10,000.

SEARS'
WONDERS OF THE WORLD,

In Nature, Art, and Kind.

COMPRISING A COMPLETE LIBRARY OF
USEFUL AND ENTERTAINING KNOWLEDGE.

And illustrated by nearly FIVE HUNDRED ENGRAVINGS, consisting of Views of Cities, Edifices, and other great works of Architecture, Monuments, Mechanical Inventions, Ruins, Illustrations of the Manners and Customs of different Nations, Religious Rites and Ceremonies, Cataracts, Volcanoes, Curiosities, Trees, Beasts, Birds, Fishes, Reptiles, and the numerous objects contained in the Fossil, Vegetable, Mineral, and Animal Kingdoms. Carefully compiled by ROBERT SEARS, from the best and latest sources.

On a subject embracing so vast a range as the rich and innumerable Wonders of "Nature's Store-house," the Editor has endeavored to produce a work commensurate with its soul-expanding importance. The contemplation of the numerous objects contained in the Fossil, Vegetable, Mineral, and Animal Kingdoms, lavished so beautifully around us, discovers facts of an interesting and extraordinary character, and alone presents abundant material for intellectual energy and research. The wonders of the Antediluvian World—the massive mountain rising above the neighboring hills—the volcano and earthquake, each spreading devastation in its course—the ever-sounding and boundless deep—the clear blue vault of heaven, studied through illimitable space with countless eyes—are phenomena that must enlarge and elevate the mind, induce ennobling views of the Universal Governor, and teach us our dependence upon his power, his wisdom, and his goodness.

In the varied works of art on which man has exercised his genius and industry, in which Science and Philosophy have aided his efforts, are recorded all that is rare, curious, and admirable; marking the gradual progress and advancing stages of improvement.

The Wonders of the Mind—the Creator's highest work, his mirror and representative—do not justly engage our thoughts. The mind is in itself a microcosm, man's chief and highest distinction—a transcript of that Intellectual Energy that first gave birth to Nature.

To select these pearls, and to seize the beauties every where presented to us, form the features of "the Wonders of the World." On all subjects, reference has been constantly made to every available source of information; the veil of error and credulity which too often obscures the narrative of the traveler has been carefully withdrawn; the most recent and best accredited authorities (whether English or American) has been seriously compared, and data given for further research; so that truth without alloy may usher in the varied departments of Nature's "ample bound."

The work is embellished with selected Engravings, derived from authentic sources, which, if regarded as highly finished specimens of art or vivid pictorial illustrations of the subjects, will be found superior to most contemporary productions.

For further particulars, please to address the subscriber post paid, without which no letter will be taken from the office.

E. WALKER, 114 Fulton street.

Agents wanted in every town and village throughout the United States. Address E. Walker, 114 Fulton street, N. Y., post paid, without which no letter will be taken from the office.

POSTMASTERS.—AGENTS of NEWSPAPERS and Periodicals.—Book Peddlers, &c., would do well to embark in the sale of this Work.

"A COMPLETE TREASURY OF USEFUL KNOWLEDGE—WORTHY OF A PLACE IN EVERY FAMILY LIBRARY THROUGHOUT THE LAND."—*Sun.*

"AN INVALUABLE COLLECTION OF EVERY THING RARE AND VALUABLE IN NATURE AND ART. SUCH A BOOK MUST SELL BY THE THOUSAND AND TENS OF THOUSANDS."—*Stewart Chronicle.*



